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Southwest Research Inst., San Antonio, TX

Prepared for

Environmental Monitoring and Support Lab.
Research Triangle Park, NC

Jun 84

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June 1984

EPA METHOD STUDY 18
METHOD 608—ORGANOCHLORINE PESTICIDES AND PCB'S

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by

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Contract 68-03-2606

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This report describes the results obtained and data analysis from an interlaboratory evaluation of EPA Method 608 (Organochlorine Pesticides and PCBs). The method is designed to analyze for 16 single-compound pesticides, chlordane, toxaphene, and seven Aroclor formulations in water and wastewater. All were included in this study except endrin aldehyde, sufficient quantities of which could not be obtained.

The study design required the analyst to dose six waters with eight analytical groups, each at six levels. The six dosing levels of each substance or combination represented three Youden pairs, one each at a low, an intermediate, and a high level. The six waters used were a laboratory pure water, a finished drinking water, and a surface water, all collected by the participant, and three low-background industrial effluents (SICs 2869, 2869 and 2621). A total of 22 laboratories participated in the study.

The method is assessed quantitatively with respect to the accuracy and precision that can be expected. In addition, results of method detection limit studies are included as are qualitative assessments of the method based upon comments by the participating laboratories.

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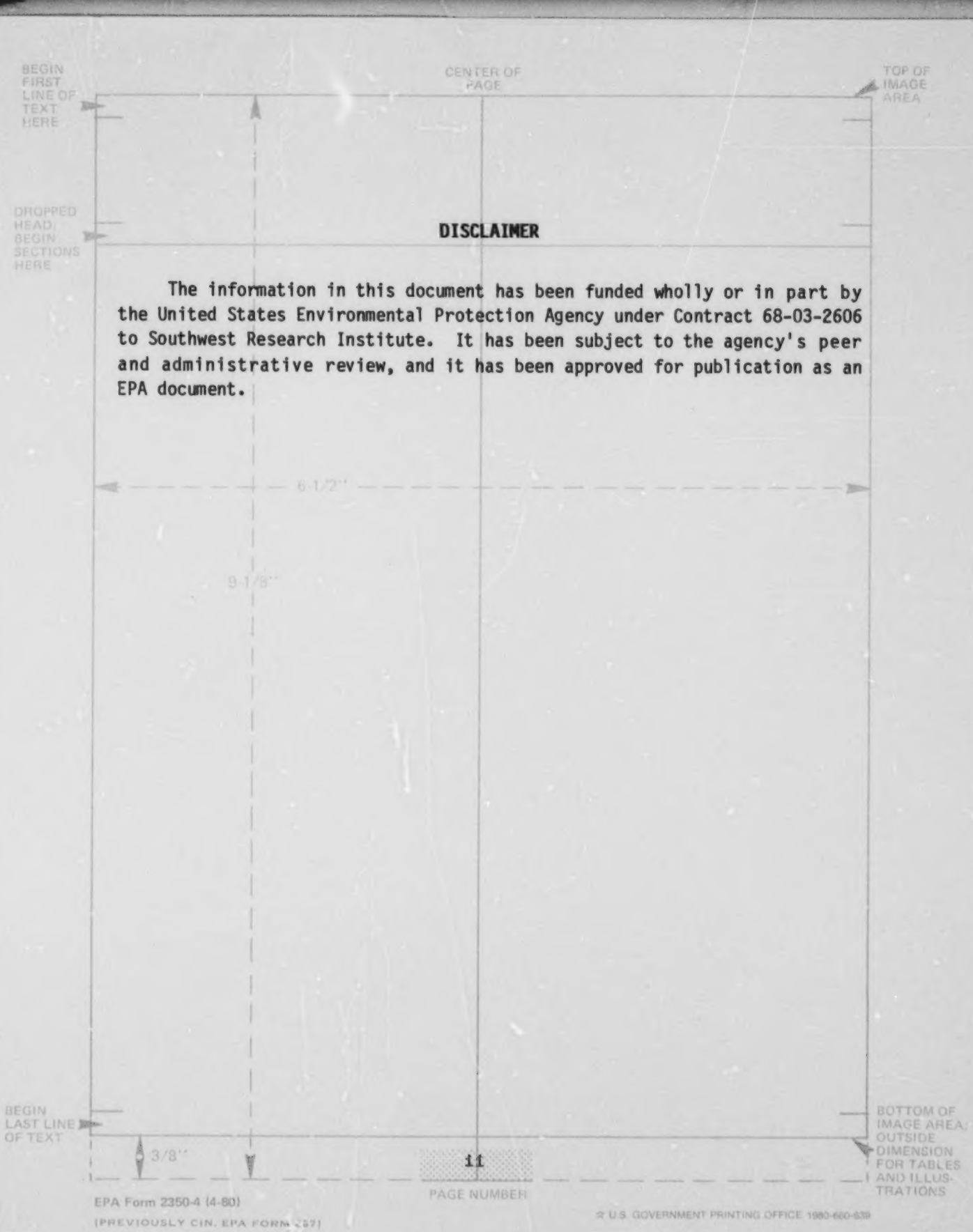

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FOREWORD

Environmental measurements are required to determine the quality of ambient waters and the character of waste effluents. The Environmental Monitoring and Support Laboratory (EMSL)-Cincinnati, conducts research to:

- develop and evaluate techniques to measure the presence and concentration of physical, chemical, and radiological pollutants in water, wastewater, bottom sediments, and solid waste,
- investigate methods for the concentration, recovery, and identification of viruses, bacteria and other microorganisms in water,
- conduct studies to determine the responses of aquatic organisms to water quality,
- conduct an agency-wide quality assurance program to assure standardization and quality control of systems for monitoring water and wastewater.

This publication reports the results of EPA's interlaboratory study for the following priority pollutants:

Aldrin	Dieldrin	Toxaphene
α-BHC	Endosulfan I	Aroclor 1016
β-BHC	Endosulfan II	Aroclor 1221
γ-BHC	Endosulfan sulfate	Aroclor 1232
δ-BHC	Endrin	Aroclor 1242
4,4'-DDD	Heptachlor	Aroclor 1248
4,4'-DDE	Heptachlor epoxide	Aroclor 1254
4,4'-DDT	Chlordane	Aroclor 1260

Federal agencies, states, municipalities, universities, private laboratories, and industry should find this evaluative study of assistance in monitoring and controlling pollution in the environment.

R. L. Booth
Director, EMSL-Cincinnati

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ABSTRACT

This report describes the results obtained and data analyses from an interlaboratory study of EPA Method 608 (Organochlorine Pesticides and PCBs). The method is designed to analyze for 16 single-compound pesticides, chlordane, toxaphene, and seven Aroclor formulations in water and wastewater. All were included in this study except endrin aldehyde, sufficient quantities of which could not be obtained. As tested here, the method utilizes three 60-mL extractions with dichloromethane, cleanup/separation on a Florisil column, and injection into a gas chromatograph equipped with an electron capture detector.

The study design required the analyst to dose six waters with eight analytical groups, each at six levels. The six dosing levels of each substance or combination represented three Youden pairs, one each at a low, an intermediate, and a high level. The six waters used were a laboratory pure water, a finished drinking water, and a surface water, collected by the participant, and three low-background industrial effluents (SICs 2869, 2869, and 2621) provided by the prime contractor. A total of 22 laboratories participated in the study.

The method is assessed quantitatively with respect to the accuracy and precision that can be expected. In addition, results of method detection limit studies are included as are qualitative assessments of the method based upon comments by the participating laboratories.

The work was performed between September 1978 to December 1981 under Contract 68-03-2606.

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SECTION 1

INTRODUCTION

EPA first promulgated guidelines [1] establishing test procedures for the analysis of pollutants in 1973, following the passage of the Federal Water Pollution Control Act in 1972 by Congress. Pursuant to the amendment and publication of these guidelines, EPA entered into a Settlement Agreement--the Consent Decree--which required the study and, if necessary, regulation of 65 "priority" pollutants and classes of pollutants of known or suspected toxicity to the biota. Subsequently, Congress passed the Clean Water Act of 1977 [2], mandating the control of toxic pollutants discharged into ambient waters by industry.

In order to facilitate the implementation of the Clean Water Act, EPA selected 129 specific toxic pollutants, 113 organic and 16 inorganic, for initial study. The organic pollutants were divided into 12 categories based on their chemical structure. Analytical methods were developed by EPA for these 12 categories through in-house and contracted research. These analytical methods may eventually be required for the monitoring of the 113 toxic pollutants in industrial wastewater effluents, as specified by the Clean Water Act of 1977.

As a logical subsequence to the work that produced proposed EPA Method 608 (Organochlorine Pesticides and PCBs) [3], an interlaboratory study was conducted to determine the precision and accuracy of the proposed method. This report describes the work performed, presents the data acquired, and gives the conclusions drawn from the collaborative effort.

Of the 25 priority pollutants named in Method 608, 24 were tested in this study. Endrin aldehyde, which is included in Method 608, was eliminated from this study because it could not be obtained in sufficient quantity for the study, except through a costly synthesis effort. The 24 substances were handled in eight groups during the analytical determinations in order to minimize the number of individual operations that had to be performed. Even so, a very substantial effort had to be made by each participating laboratory in order to perform the required

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analyses. The shortest period of performance recorded by any laboratory, measured from the time samples were received and the complete data package was submitted, was 3-1/2 months.

The eight groups of substances were as follows:

GROUP I	GROUP II
α-BHC	γ-BHC
β-BHC	Heptachlor
δ-BHC	Aldrin
Heptachlor epoxide	Endosulfan I
DDE	Dieldrin
DDD	Endrin
DDT	Endosulfan II
Endosulfan sulfate	
GROUP III	Chlordane
GROUP IV	Toxaphene
GROUP V	Aroclor 1242 + Aroclor 1254
GROUP VI	Aroclor 1232 + Aroclor 1260
GROUP VII	Aroclor 1221 + Aroclor 1248
GROUP VIII	Aroclor 1016

The non-EPA laboratories participating in this study were the 20 lowest bidders from the list of qualifying laboratories that responded to the request for bids. Qualifications were established based upon information submitted by the laboratories. The laboratories were selected to be typical of the laboratories that would utilize the method when it went into widespread usage. The participating laboratories are listed in Figure 1. The laboratories are identified by number in this report and no correlation between the identifying number and the order of laboratories in the list of participating laboratories should be presumed. The EPA laboratories participating were on a voluntary basis.

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Environmental Protection Agency
Region X
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Seattle, Washington 98101

Figure 1. Participating Laboratories

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SECTION 2

SUMMARY

As a result of the collaborative study conducted and the data analysis, the following conclusions can be drawn concerning EPA Method 608 (Organochlorine Pesticides and PCBs).

- The accuracy of the method could generally be expressed as a linear function of the true concentration. The regression equations are shown in Table 1.
- The precision of the method could generally be expressed as a linear function of the mean recovery. These regression equations are also shown in Table 1.
- Recoveries at the midrange concentration were similar to those obtained during the developmental phase in many instances and lower in others, indicating satisfactory method performance. The recoveries ranged from 68 to 101% of for single-compound pesticides, 73 to 86% for multiple-compound pesticides, and 69 to 101% for the PCB formulations in the first five matrices. Lower recoveries were obtained in the third industrial effluent due to emulsion formation. Eighty-six percent of the recoveries among the first five matrices exceeded 80% and 12.5% exceeded 90%.
- At the midrange concentration, overall percent relative standard deviations of 12 to 45, 19 to 36 and 14 to 40% were obtained for the above three groupings of compounds among the first five matrices. The single-analyst percent relative standard deviations were from 11 to 33, 10 to 31 and 12 to 28%, respectively, under the same conditions. Poorer precision was obtained for industrial effluent 3, as expected, due to its nature.
- Six water types were used in this study: laboratory pure, finished drinking, surface, and three industrial effluents. The only significant difference among the results obtained was in the recovery of the substances from the third industrial effluent.

TABLE 1. ACCURACY AND PRECISION EQUATIONS

Water type Range, ug/L	Aldrin 0.9444-5.60	alpha-BHC 0.470-3.96	beta-BHC 0.864-9.15	gamma-BHC 0.476-3.34	sigma-BHC 0.944-5.76	4,4'-DDD 2.46-22.3
Laboratory Pure						
Accuracy	X = 0.81c+0.04	X = 0.84c+0.03	X = 0.81c+0.07	X = 0.82c-0.05	X = 0.81c+0.07	X = 0.84c+0.30
Precision						
Overall	S = 0.20X-0.01	S = 0.23X	S = 0.33X-0.05	S = 0.22X+0.04	S = 0.25X+0.03	S = 0.27X+0.14
Single analyst	SR = 0.16X-0.04	SR = 0.13X+0.04	SR = 0.22X-0.02	SR = 0.12X+0.06	SR = 0.18X+0.09	SR = 0.20X-0.18
Finished Drinking						
Accuracy	X = 0.81c+0.04	X = 0.83c+0.06	X = 0.85c+0.17	X = 0.79c-0.02	X = 0.81c+0.03	X = 0.85c+0.32
Precision						
Overall	S = 0.18X+0.11	S = 0.21X	S = 0.27X-0.01	S = 0.19X+0.08	S = 0.32X-0.05	S = 0.24X-0.16
Single analyst	SR = 0.09X+0.13	SR = 0.09X+0.06	SR = 0.09X+0.22	SR = 0.08X+0.13	SR = 0.14X+0.09	SR = 0.13X+0.14
Surface						
Accuracy	X = 0.82c+0.05	X = 0.83c+0.06	X = 0.81c+0.12	X = 0.83c-0.03	X = 0.82c+0.01	X = 0.88c+0.09
Precision						
Overall	S = 0.15X+0.14	S = 0.21X+0.01	S = 0.27X-0.04	S = 0.15X+0.09	S = 0.31X+0.04	S = 0.22X-0.05
Single analyst	SR = 0.11X+0.10	SR = 0.20X-0.02	SR = 0.17X	SR = 0.04X+0.15	SR = 0.16X+0.11	SR = 0.14X+0.32
Ind. Effluent 1						
Accuracy	X = 0.76c+0.06	X = 0.78c+0.17	X = 0.79c+0.15	X = 0.81c+0.04	X = 0.75c+0.08	X = 0.96c+0.06
Precision						
Overall	S = 0.22X+0.03	S = 0.28X+0.05	S = 0.25X-0.03	S = 0.05X+0.15	S = 0.35X-0.03	S = 0.22X-0.08
Single analyst	SR = 0.14X+0.06	SR = 0.25X	SR = 0.17X+0.01	SR = 0.07X+0.10	SR = 0.20X+0.05	SR = 0.20X+0.01
Ind. Effluent 2						
Accuracy	X = 0.75c-0.03	X = 0.83c+0.04	X = 0.85c+0.06	X = 0.83c-0.07	X = 0.85c-0.01	X = 0.83c+0.26
Precision						
Overall	S = 0.28X	S = 0.19X+0.01	S = 0.27X	S = 0.13X+0.06	S = 0.25X+0.03	S = 0.18X+0.13
Single Analyst	SR = 0.24X-0.07	SR = 0.14X+0.03	SR = 0.17X+0.01	SR = 0.06X+0.07	SR = 0.15X+0.10	SR = 0.06X+0.56
Ind. Effluent 3						
Accuracy	X = 0.34c-0.07	X = 0.63c	X = 0.66c	X = 0.63c-0.03	X = 0.66c-0.03	X = 0.55c-0.13
Precision						
Overall	S = 0.63X+0.02	S = 0.31X+0.02	S = 0.26X-0.01	S = 0.28X+0.03	S = 0.31X+0.09	S = 0.42X+0.13
Single analyst	SR = 0.37X+0.01	SR = 0.11X+0.07	SR = 0.11X+0.12	SR = 0.19X+0.05	SR = 0.22X+0.06	SR = 0.23X+0.24

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TABLE 1. (CONT'D)

Water type Range, ug/L	4,4'-DDE 1.31-9.84	4,4'-DDT 3.64-22.2	Dieldrin 1.32-12.3	Endosulfan I 1.26-13.4	Endosulfan II 2.27-14.0	Endosulfan sulfate 3.86-29.7
Laboratory Pure						
Accuracy	X = 0.85c+0.14	X = 0.93c-0.13	X = 0.90c+0.02	X = 0.97c+0.04	X = 0.93c+0.34	X = 0.89c-0.37
Precision						
Overall	S = 0.28X-0.09	S = 0.31X-0.21	S = 0.16X+0.16	S = 0.18X+0.08	S = 0.47X-0.20	S = 0.24X+0.35
Single analyst	SR = 0.13X+0.06	SR = 0.17X+0.39	SR = 0.12X+0.19	SR = 0.10X+0.07	SR = 0.41X-0.65	SR = 0.13X+0.33
Finished Drinking						
Accuracy	X = 0.81c+0.17	X = 0.89c+0.31	X = 0.89c-0.08	X = 0.90c+0.02	X = 0.88c+0.10	X = 0.87c+0.11
Precision						
Overall	S = 0.20X+0.07	S = 0.32X-0.01	S = 0.15X+0.24	S = 0.16X	S = 0.28X+0.37	S = 0.26X+0.02
Single analyst	SR = 0.10X+0.23	SR = 0.13X+0.73	SR = 0.13X+0.14	SR = 0.14X-0.06	SR = 0.17X+0.30	SR = 0.15X+0.06
Surface						
Accuracy	X = 0.84c+0.10	X = 0.95c-0.09	X = 0.85c+0.01	X = 0.90c+0.38	X = 0.86c+0.03	X = 0.87c-0.57
Precision						
Overall	S = 0.22X-0.07	S = 0.29X-0.34	S = 0.26X-0.03	S = 0.23X+0.18	S = 0.24X+0.23	S = 0.22X+0.19
Single analyst	SR = 0.13X+0.01	SR = 0.15X+0.13	SR = 0.24X-0.14	SR = 0.15X	SR = 0.23X+0.11	SR = 0.11X+0.39
Ind. Effluent 1						
Accuracy	X = 0.89c+0.05	X = 0.92c+0.04	X = 0.86c+0.12	X = 0.93c+0.12	X = 0.97c+0.32	X = 0.91c-0.46
Precision						
Overall	S = 0.23X-0.09	S = 0.28X-0.11	S = 0.15X+0.06	S = 0.12X+0.02	S = 0.39X-0.03	S = 0.39X+0.28
Single analyst	SR = 0.23X-0.08	SR = 0.26X-0.11	SR = 0.18X-0.10	SR = 0.12X-0.02	SR = 0.05X+0.94	SR = 0.24X+1.04
Ind. Effluent 2						
Accuracy	X = 0.74c+0.11	X = 0.76c+0.04	X = 0.90c-0.08	X = 0.89c-0.01	X = 0.84c+0.45	X = 0.81c-0.17
Precision						
Overall	S = 0.23X	S = 0.25X+0.16	S = 0.13X+0.16	S = 0.18X+0.04	S = 0.24X+0.61	S = 0.32X-0.14
Single Analyst	SR = 0.19X+0.12	SR = 0.13X+0.47	SR = 0.12X+0.15	SR = 0.11X+0.07	SR = 0.02X+0.94	SR = 0.27X-0.16
Ind. Effluent 3						
Accuracy	X = 0.52c-0.13	X = 0.55c-0.64	X = 0.55c	X = 0.57c+0.05	X = 0.66c+0.16	X = 0.60c+0.39
Precision						
Overall	S = 0.46X+0.08	S = 0.55X+0.16	S = 0.39X+0.03	S = 0.46X+0.06	S = 0.69X-0.22	S = 0.36X+0.42
Single analyst	SR = 0.25X+0.12	SR = 0.28X+0.29	SR = 0.27X-0.03	SR = 0.16X+0.30	SR = 0.14X+0.26	SR = 0.18X+0.31

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Water type Range, ug/L	Endrin 2.15-22.6	Heptachlor 0.446-3.22	Heptachlor epoxide 0.872-6.62	Chlordane 8.49-53.0	Toxaphene 47.0-403	Aroclor 1016 10.2-88.3
Laboratory Pure						
Accuracy	X = 0.89c-0.04	X = 0.69c+0.04	X = 0.89c+0.10	X = 0.82c-0.04	X = 0.80c+1.74	X = 0.81c+0.50
Precision						
Overall	S = 0.24X+0.25	S = 0.16X+0.08	S = 0.25X-0.08	S = 0.18X+0.18	S = 0.20X+0.22	S = 0.15X+0.45
Single analyst	SR = 0.20X+0.25	SR = 0.06X+0.13	SR = 0.18X-0.11	SR = 0.13X+0.13	SR = 0.09X+3.20	SR = 0.13X+0.15
Finished Drinking						
Accuracy	X = 0.86c+0.31	X = 0.79c-0.02	X = 0.83c+0.09	X = 0.79c-0.37	X = 0.84c+0.72	X = 0.87c-0.39
Precision						
Overall	S = 0.21X+0.12	S = 0.24X+0.06	S = 0.24X-0.05	S = 0.27X+0.22	S = 0.20X+1.55	S = 0.15X+0.18
Single analyst	SR = 0.17X+0.17	SR = 0.14X+0.07	SR = 0.14X+0.07	SR = 0.17X+0.42	SR = 0.10X+3.96	SR = 0.10X+0.77
Surface						
Accuracy	X = 0.89c+0.45	X = 0.75c+0.02	X = 0.84c+0.11	X = 0.82c-0.61	X = 0.79c+2.03	X = 0.80c+0.90
Precision						
Overall	S = 0.31X+0.33	S = 0.24X+0.04	S = 0.20X+0.01	S = 0.18X+0.18	S = 0.24X-0.30	S = 0.14X+0.98
Single analyst	SR = 0.27X+0.21	SR = 0.16X+0.03	SR = 0.12X+0.02	SR = 0.11X+0.19	SR = 0.20X-0.53	SR = 0.10X+0.77
Ind. Effluent 1						
Accuracy	X = 0.97c+0.15	X = 0.66c+0.03	X = 0.83c+0.11	X = 0.82c-0.43	X = 0.80c-0.44	X = 0.81c+0.99
Precision						
Overall	S = 0.32X+0.03	S = 0.21X+0.08	S = 0.19X-0.04	S = 0.40X-1.14	S = 0.21X+2.34	S = 0.11X+1.69
Single analyst	SR = 0.24X+0.31	SR = 0.14X+0.08	SR = 0.15X+0.01	SR = 0.28X-0.85	SR = 0.15X-1.92	SR = 0.12X+0.43
Ind. Effluent 2						
Accuracy	X = 0.94c	X = 0.58c+0.08	X = 0.87c+0.08	X = 0.74c+0.13	X = 0.71c+4.74	X = 0.75c+1.10
Precision						
Overall	S = 0.28X-0.01	S = 0.30X+0.11	S = 0.18X+0.03	S = 0.27X-0.66	S = 0.21X+7.45	S = 0.19X+0.28
Single Analyst	SR = 0.23X-0.18	SR = 0.22X+0.07	SR = 0.15X+0.08	SR = 0.17X-0.48	SR = 0.15X-1.92	SR = 0.20X-0.17
Ind. Effluent 3						
Accuracy	X = 0.55c+0.13	X = 0.28c-0.01	X = 0.54c	X = 0.34c-0.20	X = 0.42c+2.27	X = 0.50c+0.78
Precision						
Overall	S = 0.49X	S = 0.93X-0.03	S = 0.33X+0.10	S = 0.42X+0.23	S = 0.44X+0.43	S = 0.48X-0.40
Single analyst	SR = 0.29X+0.04	SR = 0.57X+0.02	SR = 0.18X+0.14	SR = 0.34X-0.20	SR = 0.23X+3.04	SR = 0.36X-0.94

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TABLE 1. (CONT'D)

Water type Range, ug/L	Aroclor 1221 23.9-191	Aroclor 1232 24.8-185	Aroclor 1242 13.0-106	Aroclor 1248 16.4-154	Aroclor 1254 17.4-108	Aroclor 1260 36.8-254
Laboratory Pure						
Accuracy	X = 0.96c+0.65	X = 0.91c+10.79	X = 0.93c+0.70	X = 0.97c+1.06	X = 0.76c+2.07	X = 0.66c+3.76
Precision						
Overall	S = 0.35X-0.62	S = 0.31X+3.50	S = 0.21X+1.52	S = 0.25X-0.37	S = 0.17X+3.62	S = 0.39X-4.86
Single analyst	SR = 0.29X-0.76	SR = 0.21X-1.93	SR = 0.11X+1.40	SR = 0.17X+0.41	SR = 0.15X+1.66	SR = 0.22X-2.37
Finished Drinking						
Accuracy	X = 0.84c+1.56	X = 0.91c+2.06	X = 1.00c-1.09	X = 0.90c+1.96	X = 0.83c+1.28	X = 0.78c+3.87
Precision						
Overall	S = 0.37X-0.95	S = 0.42X-3.01	S = 0.22X+0.05	S = 0.20X+3.66	S = 0.17X+2.04	S = 0.34X-2.36
Single analyst	SR = 0.31X-2.70	SR = 0.29X-2.71	SR = 0.11X+1.20	SR = 0.12X+4.58	SR = 0.13X+0.87	SR = 0.20X-2.12
Surface						
Accuracy	X = 0.84c+2.37	X = 0.99c+2.27	X = 0.93c+0.31	X = 0.86c+1.72	X = 0.77c+1.81	X = 0.84c+3.10
Precision						
Overall	S = 0.40X-0.18	S = 0.35X-1.50	S = 0.28X+0.55	S = 0.22X-0.37	S = 0.17X+3.12	S = 0.27X-0.74
Single analyst	SR = 0.22X+3.93	SR = 0.25X-1.92	SR = 0.14X+0.57	SR = 0.10X+1.80	[illegible] = 0.12X+0.51	SR = 0.15X+0.10
Ind. Effluent 1						
Accuracy	X = 0.84c+6.78	X = 0.88c+7.65	X = 0.99c+0.89	X = 0.91c+0.85	X = 0.88c-1.41	X = 0.79c+3.27
Precision						
Overall	S = 0.19X+9.76	S = 0.35X-1.27	S = 0.22X+1.87	S = 0.18X+1.22	S = 0.19X+0.52	S = 0.25X+2.53
Single analyst	SR = 0.07X+9.70	SR = 0.30X-5.27	SR = 0.04X+2.54	SR = 0.11X+1.78	SR = 0.10X+1.66	SR = 0.11X+2.50
Ind. Effluent 2						
Accuracy	X = 0.76c+4.92	X = 0.91c+1.94	X = 0.90c+0.43	X = 0.82c+3.72	X = 0.75c-1.74	X = 0.80c-1.84
Precision						
Overall	S = 0.37X-0.39	S = 0.44X-5.16	S = 0.17X+1.83	S = 0.22X+4.09	S = 0.23X-0.44	S = 0.33X-2.71
Single Analyst	SR = 0.24X+2.57	SR = 0.25X-2.45	SR = 0.09X+1.65	SR = 0.05X+5.60	SR = 0.17X-1.04	SR = 0.14X+0.14
Ind. Effluent 3						
Accuracy	X = 0.58c+0.71	X = 0.57c-0.03	X = 0.53c+0.30	X = 0.52c+0.19	X = 0.48c-0.26	X = 0.56c-0.24
Precision						
Overall	S = 0.57X-1.78	S = 0.52X-0.19	S = 0.33X+1.92	S = 0.49X+0.30	S = 0.38X+1.12	S = 0.44X+0.70
Single analyst	SR = 0.45X-1.80	SR = 0.26X-2.09	SR = 0.13X+2.36	SR = 0.35X-0.26	SR = 0.22X+1.85	SR = 0.16X+5.01

c - true concentration
X - mean concentration

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This effluent gave a large emulsion on extraction that resulted in lowered extraction efficiency. With one exception, there was no detectable difference in precision among the results from the six waters studied.

- The principal problem area noted by the participants was related to the concentration of extracts with the Kuderna-Danish apparatus.

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SECTION 3

DESCRIPTION OF STUDY

The study design was based on Youden's original plan [4] for collaborative evaluation of precision and accuracy for analytical methods. According to Youden's design, samples are analyzed in pairs, and each sample of a pair has a slightly different concentration of the constituent. The analyst is directed to do a single analysis and report one value for each sample, as if for a normal, routine sample.

In this study, samples were prepared as concentrates in sealed glass ampules and shipped to the analyst along with portions of final effluents from manufacturing plants from three relevant industries. Each participating laboratory was responsible for supplying laboratory pure water, finished water, and a surface water, thus giving a total of six water matrices involved in the study. The analyst was required to add an aliquot of each concentrate to a volume of water from each of the six waters and submit the spiked water to analysis. Three pairs of samples were used. One pair contained the substances at what was considered to be equivalent to a low level for the industrial effluents; a second pair contained the substances at an intermediate level and the third pair contained the substances at a high level.

TEST DESIGN

A summary of the test design using Youden's nonreplicate technique for x and y samples is given below:

1. Three Youden pairs were used for each parameter with the deviation from the mean of each pair being at least 5% but no more than 20.

2. The three Youden pairs were spread over a usable and realistic range with the lowest level estimated to be near the detection limit in industrial effluent with the highest background of electron capture-sensitive substances.

3. Analyses were performed in six waters. Three of the waters were selected from relevant industries as determined by the

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information contained in a memorandum of December 29, 1978 from M. Dean Neptune, Analytical Programs, Effluent Guidelines Division, to R. B. Schaffer, Director, Effluent Guidelines Division, through W. A. Telliard, Chief, Energy and Mining Branch. Therefore, each participant was to generate 36 data points for each substance.

4. Two hundred eighty-eight samples (eight analytical groups x six concentrations x six replicates) prepared as stable concentrates in sealed glass ampules were shipped with approximately 61 liters each of the three industrial effluents to 20 non-EPA laboratories and to two EPA laboratories. The concentrations of substances in the ampules were unknown to the participants.

5. Each participant was supplied with a copy of Method 608 and supplementary instructions relative to spiking procedure, cleanup column to be used, GC column and detector to be used, and GC injection technique.

6. To commence an analysis, the analyst was instructed to open an ampule, add 1 mL of concentrate to 1 L of water, and analyze per instructions.

7. Each sample was to be analyzed once.

8. Before the formal study began, each participant was sent a pair of ampules (not one of the pairs used in the study) for a trial analysis by Method 608. After submitting data from these analyses to SwRI, participants met in Cincinnati to discuss and resolve problems encountered during the trial run.

9. Fifty ampules of each concentrate prepared were supplied to the project officer.

PREPARATION OF SAMPLES, WASTEWATER SELECTION, AND PROCUREMENT

The pesticide and PCB substances used to prepare sample concentrates were obtained from several commercial sources and from the Quality Assurance Section, EPA, HERL, ETD, ACB (MD-69), Research Triangle Park, North Carolina. Substances obtained from commercial sources were compared to those from the EPA to establish that purity and GC profile, in the case of multipeak substances, and were found to be satisfactory.

The detailed protocol for concentrate and ampule production was reviewed and approved by the project officer before ampule production

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commenced. Salient points of the protocol are described in the following paragraph.

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Sample concentrates were prepared by dissolving precisely-weighed (analytical balance) amounts in methyl alcohol or acetone in Class A volumetric flasks. Where dilutions were required, Class A volumetric glass pipettes were used to transfer the required volumes. The volumes transferred were never less than 4 mL. Solutions were put into brown, borosilicate ampules, chilled, and heat-sealed. All glassware had been fired overnight at approximately 400°C before use. The sealed ampules were stored in paperboard boxes at room temperature until shipped to participants.

Before each concentrate was used to fill ampules, the concentration(s) of substance(s) was compared with a standard that had been prepared from a separate weighing of substance(s). Three ampules taken at random from the ampules produced were checked against the same external standard mentioned immediately above. These verification checks served to prevent gross errors from being committed; the true values were assumed to be those established by the weighing of substance for concentrate preparation. It was rare to find a verification analysis which deviated more than 5% from the true value. The true values for all test substances are given in Table 2.

One of the three wastewaters selected for use in the study was from a pesticide plant (SIC 2869-industrial effluent 1), one from an organics and plastics plant (SIC 2869-industrial effluent 2), and the third from a kraft paper mill (SIC 2621-industrial effluent 3). Industrial effluent 1 had a relatively high interference background; however, only two of the peaks coeluted with standards--heptachlor and endosulfan II. The amounts indicated were in the low parts per trillion range. Peaks eluting in the first four minutes offered a good challenge to the detection of the lowest Youden pair peaks in this area. Industrial effluent 2 offered low to moderate interferences from substances that were not parameters under test. Upon standing several months this water developed peaks that were strongly suspected to be from elemental sulfur, causing mercury treatment of extracts to be necessary in many instances. Industrial effluent 3 formed a tenacious emulsion that required centrifugation to break. Even then, only about 60% of the extracting solvent was usually recovered. Severe interferences from elemental sulfur peaks were present in the extracts but these could be eliminated almost totally with mercury treatment.

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TABLE 2. TRUE CONCENTRATIONS IN STUDY SAMPLES
(1 mL concentrate in 1 L water; µg/L)

Compound	Lowest pair		Medium pair		Highest pair	
Ampule Lot Number	2	6	5	1	3	4
GROUP I						
α-BHC	0.470	0.566	1.882	2.266	3.293	3.965
β-BHC	1.144	0.864	3.432	2.592	9.152	6.912
δ-BHC	0.944	1.152	3.776	4.608	4.720	5.760
heptachlor epoxide	1.104	0.872	4.416	3.488	6.624	5.232
4,4'-DDE	1.312	1.640	5.248	6.560	7.872	9.840
4,4'-DDD	2.464	3.184	4.928	6.368	17.248	22.288
4,4'-DDT	4.440	3.640	8.880	7.280	22.200	18.200
endosulfan sulfate	4.952	3.864	14.856	11.592	29.712	23.184
Ampule Lot Number	2	5	4	6	1	3
GROUP II						
γ-BHC	0.476	0.556	1.428	1.668	2.856	3.336
heptachlor	0.446	0.536	0.893	1.072	2.678	3.216
aldrin	0.944	1.120	3.776	4.480	4.720	5.600
endosulfan I	1.680	1.264	5.040	3.792	13.440	10.112
dieldrin	1.752	1.320	3.504	2.640	12.264	9.240
endrin	2.152	2.824	6.456	8.472	17.216	22.593
endosulfan II	2.800	2.272	5.600	4.544	14.000	11.360
Ampule Lot Number	3	6	5	2	1	4
GROUP III						
chlordane	10.592	8.488	42.368	33.952	52.960	42.440
Ampule Lot Number	6	2	4	3	5	1
GROUP IV						
toxaphene	57.520	47.048	172.560	141.144	402.640	329.336
Ampule Lot Number	5	3	4	6	2	1
GROUP V						
Aroclor 1242	13.024	15.120	26.048	30.240	91.168	105.840
Aroclor 1254	17.392	21.600	52.176	64.800	86.960	108.000
Ampule Lot Number	4	3	1	2	6	5
GROUP VI						
Aroclor 1232	24.768	30.768	49.536	61.536	148.608	184.608
Aroclor 1260	42.408	36.832	127.224	110.496	254.448	220.992
Ampule Lot Number	6	2	5	3	4	1
GROUP VII						
Aroclor 1221	31.864	23.912	63.728	47.808	191.184	143.472
Aroclor 1248	16.408	22.000	32.816	44.000	114.856	154.000
Ampule Lot Number	2	1	4	3	6	5
GROUP VIII						
Aroclor 1016	10.248	13.856	40.992	55.520	61.488	83.280

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The wastewaters were collected in 10-barrel (55-gallon untreated iron drums) quantities and shipped to SwRI for reshipment to participants in 1-gallon glass containers obtained from Burdick and Jackson, Inc. Industrial effluent 1 was not pooled before shipment but samples taken from barrels 1, 5, and 10 gave chromatograms that were indistinguishable from one another; therefore, homogeneity was assumed. Industrial effluents 2 and 3 were pooled in a 600-gallon tank before being put in bottles.

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ANALYSIS AND REPORTING

In addition to admonitions to follow Method 608 procedure, supplementary instructions were sent to participants at the time the trial run ampules were shipped. Participants were advised how to dose the water, to use only a Florisil cleanup column, and to make injections of extract into the GC using the solvent-flush technique described by Burke [5], if manual injections were used. Only electron capture detectors were to be used. Acceptable dose-response data for dieldrin were included as an aid to determining the performance of an electron capture detector. Also, the request was made that all pertinent GC recorder charts be sent with the data submitted for the trial run and the formal tests to follow.

At the Cincinnati conference, trial run data were presented and a step-by-step discussion of the method was given. The most common errors (calculation, standards preparation, and improper expression of results) were pointed out. At the meeting, the following supplementary instructions were given:

1. Column 1, as given in Method 608, and electron capture detectors will be used by all participants.

2. Quantitation of the multipeak substances will be left to the discretion of the analyst with respect to the number of peaks used and whether or not to average the values if more peaks than one are followed in the analyses.

3. The three fractions (6%, 15%, and 50% ethyl ether fractions) will be separated on Florisil in the analyses of Groups I and II during the analyses of all unspiked and spiked waters.

After the Cincinnati conference, a follow-up letter was sent to each participant requesting that the example data calculation sheets and data summary sheets that were enclosed be used during the study. The same letter requested that the final report include information on the following:

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1. method of quantitating multipeak substances;
2. sources of standards;
3. source of surface water and the nature of any possible contaminants;
4. suggestions as to how Method 608 could be improved.

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DISTRIBUTION OF SAMPLES

A single shipment of 288 ampules was made by overnight air express to all laboratories. No instance of ampule breakage during shipment was reported. However, some participants reported shortages or having received empty, unbroken ampules and others accidentally broke ampules during the study. Replacement ampules were provided in these cases.

The water matrices were also shipped by overnight air express, each participant receiving 61 liters (16 gallons) of each of the three industrial effluents. The time required to collect and distribute the effluents was about six weeks. Only 2 gallons were reported to have been broken in transit. Several gallons were broken or otherwise made unusable through laboratory mishaps. Replacement shipments were made in these instances.

Specifications within the scope of work required that concentrates for spiking exhibit satisfactory stability for 45 days before the trial run ampules could be sent out and for 90 days before shipments for the formal study could commence. These milestones were passed without significant difficulty. The stability measurements consisted of comparing the highest level of the middle Youden pair against freshly prepared standards. Four ampules were withdrawn at random at 0-, 45-, and 90-day periods. Triplicate GC injections of the properly diluted content were made and the average value obtained compared to the freshly prepared standards. Deviations from the true value varied in a manner similar to that observed during the verification analyses. Thus, stability was considered to be satisfactory.

The solvent for all concentrations, except Group II, was methyl alcohol. The solvent for Group II was acetone. These solvents were chosen because of their hydrophilicity and satisfactory performance during informal stability tests conducted earlier in the program. During these tests the only unstable combinations noted were acetone-endosulfan sulfate and methyl alcohol-endosulfan II. Thus, acetone was chosen for Group II concentrates and methyl alcohol for the others.

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The unrefrigerated plant effluents remaining in reserve at SwRI were periodically examined by extraction and GC injection. Industrial effluents 1 and 3 were not observed to change but industrial effluent 2 exhibited what appeared to be typical sulfur peaks after standing for 2 months. These peaks were reducible by applying the mercury cleanup treatment as given in Method 608. Participants were advised by letter to be on the lookout for such changes in the extract profile for industrial effluent 2 and to apply the mercury cleanup where the need was indicated.

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SECTION 4

TREATMENT OF DATA

The objective of this interlaboratory study was to obtain information about the accuracy and precision associated with measurements generated by Method 608. This objective was met through the use of statistical analysis techniques designed to extract and summarize the relevant information about accuracy and precision from the data reported by the participating laboratories. The statistical techniques employed in the data reduction process are similar to the techniques suggested in the ASTM Standard Practice D2777-77.

The algorithms required to perform the statistical analyses have been integrated into a system of computer programs referred to as IMVS (Interlaboratory Method Validation Study). The analyses performed by IMVS [6] include several tests for the rejection of outliers (laboratories and individual data points), summary statistics by concentration level for mean recovery (accuracy), overall and single-analyst standard deviation (precision), determination of the linear relationship between mean recovery and concentration level, determination of the linear relationship between the precision statistics and mean recovery, and a test for the effect of water type on accuracy and precision.

A detailed description of each of the statistical analysis procedures is presented below.

PREPROCESSING

An initial review of the data was performed to determine if a systematic error was evident in the data that could be identified and legitimately corrected prior to data analysis. Chromatograms and supporting data were investigated to verify that the analyses were run under the proper conditions and that calculations were accurate and supportable. Where an anomaly existed, such as a series of results that were different from the true values by one or more orders of magnitude, the analyst was contacted, told that there was an apparent error, and asked to check his values. No indication was given as to the nature of the

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inconsistency in order not to prejudice the results. If an error was found, the corrected values were used in the data analyses. If the analyst reported no error could be found, the data were allowed to stand as reported.

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All analyses reported as less than a detection limit and results that the analysts noted as influenced by spillage or loss of sample were removed from the data set prior to insertion into the computer program. The data set thus prepared was utilized in the statistical analysis supplied by the sponsor.

REJECTION OF OUTLIERS

Spurious data points are always a part of any set of data collected during an interlaboratory test program. It is important to identify and remove these data points because they can lead to values of summary statistics which are not representative of the general behavior of the method. However, some erratic behavior in the data may be directly related to some facet of the method under the study. Therefore, spurious data points should not be removed indiscriminantly, and any points that are removed should be clearly identified since further investigation of the analytical conditions related to the outliers might be of value. Data rejected as outliers for this study as a result of any of the following tests for outliers have been identified by the symbol "*" in the raw data tables.

YOUDEN'S LABORATORY RANKING PROCEDURE

In some cases the analytical values reported by a specific laboratory are so consistently high or low that a large systematic error may be attributed to that laboratory. These data are not representative of the method and should be rejected. Youden's [4] ranking test for outlying laboratories was applied separately to data from each of the waters used in this study. Since six water types were used in this study, the laboratory ranking procedure was applied to these six different subsets of the data. Each laboratory ranking test was performed at the 5% level of significance.

The Youden laboratory ranking procedure requires a complete set of data from every laboratory within a given water type. Missing data from labortory i for water type j were replaced by the following procedure. Letting X_{ijk} denote the reported measurement from laboratory i for water type j and concentration level C_k, it is assumed that

$$X_{ijk} = \beta_j \cdot C_k^{\gamma_j} \cdot L_i \cdot \varepsilon_{ijk}$$

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where β_j and γ_j are fixed parameters which determine the effect of water type j, L_i is the systematic error due to laboratory i and ε_{ijk} is the random within laboratory error. Taking natural logarithms, it follows that

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$$\ln X_{ijk} = \ln \beta_j + \gamma_j \ln C_k + \ln L_i + \ln \varepsilon_{ijk}$$

which is a linear regression model with dependent variable $\ln X_{ijk}$ and independent variable $\ln C_k$. (Details and justification for this model are discussed in the section "Comparison of Accuracy and Precision Across Water Types.")

The natural logarithms of the individual laboratory's data were regressed against the natural logarithms of the true concentration levels for the six ampules in each water type. The predicted values $\widehat{\ln X_{ijk}}$ were obtained from the regression equation, and the missing values for X_{ijk} were estimated by $\hat{X}_{ijk} = \exp(\widehat{\ln X_{ijk}})$, where exp (c) denotes the constant e raised to the c power.

If the ranking test rejected a laboratory for a specific water type, then all of the laboratory data for that water type were rejected as outliers. The rejected values were excluded from all the remaining analyses. In addition, after completion of the laboratory ranking procedure, the predicted values created to fill in for the missing data were rejected and excluded from further analyses for all laboratories.

TESTS FOR INDIVIDUAL OUTLIERS

The data remaining after the laboratory ranking procedure were grouped by water type. For each water type, the data were broken down into six subsets defined by the six concentration levels (ampules) used in the study. For each subset of the data, all missing, zero, "less than" and "nondetect" data were rejected. Next, the test for individual outliers constructed by Thompson [7] and suggested in the ASTM Standard Practice D2777-77 was applied to the data using a 5% significance level. If an individual data point was rejected based on this test, it was removed from the subset, and the test was repeated using the remaining data in the subset. This process was continued until no additional data could be rejected.

STATISTICAL SUMMARIES

Several summary statistics were calculated using the data remaining for each concentration level after the outlier rejection tests were

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performed. These summary statistics include: the number of retained data points, the mean recovery, accuracy as a percent relative error, the absolute overall standard deviation, the percent relative overall standard deviation, the absolute single-analyst standard deviation, and the percent relative single-analyst standard deviation. The basic formulas used to calculate these statistics are presented below where $X_1, X_2, \ldots, X_n$ denote the values of the n retained data points for a specific concentration level.

Mean Recovery (X):

$$X = \frac{1}{n} \sum_{i=1}^{n} X_i$$

The conventional notation for mean recovery is $\bar{X}$; however the symbol X is used in this report to be consistent with the output from the computer program.

Accuracy as a % Relative Error:

$$\%RE = \frac{X - \text{True Value}}{\text{True Value}} \times 100$$

Overall Standard Deviation:

$$S = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (X_i - X)^2}$$

and

Percent Relative Overall Standard Deviation:

$$\%RSD = \left(\frac{S}{X}\right) \times 100$$

The overall standard deviation S indicates the precision associated with measurements generated by a group of laboratories. This represents the broad variation in the data collected in an interlaboratory study. However, a measure of how well an individual analyst can expect to perform in his own laboratory is another important measure of precision. This single-analyst precision, denoted by SR, was estimated for each Youden pair by

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$$SR = \sqrt{\frac{1}{2(m-1)} \sum_{i=1}^{m} (D_i - \bar{D})^2}$$

where m - the number of complete sets of Youden pair observations remaining after outliers have been removed,

D_i - the difference between the observations in the ith Youden pair,

$\bar{D}$ - average of the D_i values.

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The percent relative single-analyst standard deviation was calculated by

$$\%RSD\text{-}SR = \frac{SR}{X^*} \times 100$$

where X* is the average of the two mean recovery statistics corresponding to the two concentration levels defining the particular Youden pair.

These summary statistics provide detailed information on the accuracy and precision of the data obtained for each concentration level. One objective of the statistical analysis of the data is to summarize the information about accuracy and precision which is contained in the statistics.

A systematic relationship often exists between the mean recovery (X) and the true concentration level (C) of the analyte in the sample. In addition, there are often systematic relationships between the precision statistics (S and SR) and the mean recovery (X). Usually these systematic relationships can be adequately approximated by a linear relationship (i.e., by a straight line). Once these straight lines are established, they can be used to conveniently summarize the behavior of the method within a water type, and they can aid in comparing the behavior of the method across water types. In addition they can be used to obtain estimates of the accuracy and precision at any concentration level within the applicable range studied. They can also be used to predict the behavior of the method when used under similar conditions. These important relationships are discussed below.

STATEMENT OF METHOD ACCURACY

The accuracy of the method is characterized by the relationship of the mean recovery (X) to the true concentration (C) of the analyte in the water sample. In order to obtain a mathematical expression for this relationship, a regression line of the form

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$$X = a + b \cdot C \quad (1)$$

was fitted to the data by regression techniques

The true concentration values often vary over a wide range. In such cases, the mean recovery statistics associated with the larger concentration values tend to dominate the fitted regression line producing relatively larger errors in the estimates of mean recovery at the lower concentration values. In order to eliminate this problem, a weighted least squares technique was used to fit the mean recovery data to the true concentration values. The weighted least square technique was performed by dividing both sides of Equation (1) by C resulting in Equation (2)

$$\frac{X}{C} = a \cdot \frac{1}{C} + b \quad (2)$$

The {X/C} values were regressed against the {1/C} values using ordinatory least squares to obtain estimates for the values of a and b. (This is equivalent to performing a weighted least squares with weights $w = 1/C^2$; see Reference 8, page 108 for details.) Equation (2) can easily be converted to the desired relationship given by Equation (1). The intercept (b) from Equation (2) becomes the slope (b) for Equation (1) and the slope (a) from Equation (2) becomes the intercept (a) for Equation (1). Equation (1) can be used to calculate the percent recovery over the applicable range of concentrations used in the study.

The percent recovery is given by

$$\text{Percent Recovery} = \left[\frac{a + b \cdot C}{C}\right] x\ 100 = \left[\frac{a}{C} + b\right] x\ 100 \quad (3)$$

If the absolute value of the ratio (a/C) is small relative to the slope (b) for concentration in the low end of the range of concentration levels used in the study, then the percent recovery can be approximated by b x 100. For example, suppose the true concentration values range from 25 µg/L to 515 µg/L, the fitted line is given by $X = 0.20 + 0.85 \cdot C$. The percent recovery would be approximated by (0.85) x 100 = 85% over the specified range of 25 µg/L to 515 µg/L.

If the ratio (a/C) is not small relative to the slope (b), then the percent recovery depends upon the true concentration (C), and it must be evaluated at each concentration value within the specified range.

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STATEMENT OF METHOD PRECISION

The precision of the method is characterized by the relationships between precision statistics (S and SR) and mean recovery (X). In order to obtain a mathematical expression for these relationships, regression lines of the form

$$S = d + e \cdot X \quad (4)$$

and

$$SR = f + g \cdot X^* \quad (5)$$

were fitted to the data.

As discussed previously with respect to accuracy, the values of X and X* often vary over a wide range. In such cases the standard deviation statistics associated with the larger mean recovery values will dominate the regression lines. This will produce relatively larger errors in the estimates of S and SR at the lower mean recovery values. Therefore, a weighted least squares technique was also used to establish the values of the parameters d, e, f and g in Equations (4) and (5). The weighted least squares technique was performed by dividing both sides of Equation (4) by X* resulting in Equation (6)

$$\frac{S}{X} = d \cdot \frac{1}{X^*} + e \quad (6)$$

and by dividing both sides of Equation (5) by X* resulting in Equation (7)

$$\frac{SR}{X^*} = f \cdot \frac{1}{X^*} + g \quad (7)$$

The {S/X} values were regressed against the {1/X} values and the {SR/X*} values were regressed against the 1/X* values using ordinary least squares to obtain estimates for the parameters d, e, f and g.

Equations (4) and (5) were obtained from Equations (6) and (7) in a manner similar to that discussed for mean recovery. The slope (d) for Equation (6) is the intercept (d) for Equation (4), and the intercept (e) for Equation (6) is the slope (e) for Equation (4). Similarly, the slope

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(f) for Equation (7) is the intercept (f) for Equation (5), and the intercept (g) for Equation (7) is the slope (g) for Equation (5).

Given Equations (4) and (5), the percent relative overall standard deviation and the percent relative single-analyst standard deviation are

$$\%RSD = \left[\frac{d}{X} + e\right] \times 100 \qquad (8)$$

and

$$\%RSD\text{-}SA = \left[\frac{f}{X^*} + g\right] \times 100 \qquad (9)$$

respectively. If the absolute value of the ratio (d/X) is small relative to the slope (e), then the percent relative overall standard deviation can be approximated by (e x 100) over the applicable range of mean recovery values. Similarly if the ratio (f/X*) is small relative to the slope (g), then the percent relative single-analyst standard deviation can be approximated by (g x 100) over the applicable range of mean recovery values.

If the ratios (d/X and f/X*) are not small relative to the slopes (e) and (f), then the percent relative standard deviations depend upon the values of the mean recovery statistics X and X*, and they should be evaluated separately for each value of X and X*.

COMPARISON OF ACCURACY AND PRECISION ACROSS WATER TYPES

It is possible that the accuracy and precision of Method 608 depend upon the type of water being analyzed. The summary statistics X, S and SR are calculated separately for each concentration level within each water type. They can be compared across water types in order to obtain information about the effects of water type on accuracy and precision. However, the use of these summary statistics in this manner has several disadvantages. First, it is cumbersome since there are 36 mean recovery statistics (X) (six concentrations x six waters), 36 percent statistics (S) and 18 precision statistics (SR) calculated for each compound. Comparison of these statistics across concentration levels and across water types becomes unwieldly. Second, the statistical properties of this type of comparisons procedure are difficult to determine. Finally, due to variation associated with X, S and SR, comparisons based on these statistics can lead to inconsistent conclusions about the effect of water type. For example, distilled water may produce a significantly lower value

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than surface water for the precision statistic S at a high concentration, but a significantly higher value for S at a low concentration.

An alternative approach, described in detail in Reference [9], has been developed to test for the effects of water type. This alternative approach is based on the concept of summarizing the average effect of water type across concentration levels rather than studying the local effects at each concentration level. If significant differences are established by this alternative technique, then the summary statistics can be used for further local analysis.

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The test for the effect of water type is based on the following statistical model. If X_{ijk} denotes the measurement reported by laboratory i for water type j and ampule k, then

$$X_{ijk} = \beta_j \cdot C_k^{\gamma_j} \cdot L_i \cdot \varepsilon_{ijk} \qquad \begin{matrix} i = 1,2,\ldots,n \\ j = 1,2,\ldots,6 \\ k = 1,2,\ldots,6 \end{matrix} \qquad (10)$$

The model components β_j and γ_j are fixed parameters which determine the effect of water type j on the behavior the observed measurements $\{X_{ijk}\}$. The parameter C_k is the true concentration level associated with ampule k. The model component L_i is a random factor which accounts for the systematic error associated with laboratory i. The model component ε_{ijk} is the random factor which accounts for the within laboratory error.

The model is designed to approximate the global behavior of the data. The multiplicative structure was chosen because of two important properties. First, it allows for a possible curvilinear relationship between the data $\{X_{ijk}\}$ and the true concentration level C_k through the use of the exponent γ_j on C_k. This makes the model more flexible in comparison to straight line models. Second, as will be seen below, there is an inherent increasing relationship between the variability in the data and the concentration level C_k in this model. This property is important because it is typical of interlaboratory data collected under conditions where the true concentration levels vary widely.

Accuracy is related directly to the mean recovery or expected value of the measurements $\{X_{ijk}\}$. The expected value for the data modeled by Equation (10) is

$$E(X_{ijk}) = \beta_j \cdot C_k^{\gamma_j} \cdot E(L_i \cdot \varepsilon_{ijk}) \qquad (11)$$

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Precision is related to the variability in the measurements $\{X_{ijk}\}$. The variance of the data modeled by Equation (10) is

$$\text{Var}(X_{ijk}) = \beta_j C_k^{\gamma_j 2} \text{Var}(L_i \cdot \varepsilon_{ijk}) \quad (12)$$

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which is an increasing function of C_k.

The effect of water type on the accuracy and precision of Method 608 is determined by the values of the parameters $\{\beta_j\}$ and $\{\gamma_j\}$ in Equations (11) and (12). If the $\{\beta_j\}$ and $\{\gamma_j\}$ vary with j (i.e., vary across water type), then the accuracy and precision of the method also vary across water type.

In order to determine if these parameters do vary across water type and to compare their values, they must be estimated from the laboratory data using regression techniques. Equation (10) represents the basic model. However, taking natural logarithms of both sides of Equation (10), the following straight line regression model is obtained,

$$\ln X_{ijk} = \ln \beta_j + \gamma_j \ln C_k + \ln L_i + \ln \varepsilon_{ijk} \quad (13)$$

which can be analyzed using standard linear model analysis techniques. The parameter $\ln \beta_j$ is the intercept and γ_j the slope of the regression line associated with water type j. It is assumed that $\ln L_i$ is normally distributed with mean 0 and variance σ_L^2 and that $\ln \varepsilon_{ijk}$ is normally distributed with mean 0 and variance σ_ε^2 and that the $\{\ln L_i\}$ and $\{\ln \varepsilon_{ijk}\}$ terms are independent.

Based on Equation (13) the comparison of water types reduces to the comparison of straight lines. Distilled water is viewed as a control, and each of the remaining lines is compared directly to the line for distilled water.

Using the data on the log-log scale and regression techniques, the parameters $\ln \beta_j$ (and hence β_j) and γ_j can be estimated. The estimates are then used to test the null hypothesis that there is no effect due to water type. The formal null and alternative statistical hypotheses H_0 and H_A are given by

$$H_0: \ln \beta_j - \ln \beta_1 = 0 \text{ and } \gamma_j - \gamma_1 = 0 \text{ for } j = 2,3,4,5,6$$

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versus

H_A: $\ln \beta_j - \ln \beta_1 \neq 0$ and/or $\gamma_j - \gamma_1 \neq 0$ for some $j = 2,3,4,5,6$

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The test of null hypothesis H_0 against the alternative hypothesis H_A is based on an F-statistic derived from standard linear model theory. The probability of obtaining a value of an F-statistic as large as the value which was actually observed (F OBS), denoted by P(F > F OBS), is calculated under the assumption that H_0 is true. The null hypothesis H_0 is rejected in favor of H_A if P(F > F OBS) is less than 0.05.

If H_0 is rejected, then some linear combination of the differences $\ln \beta_j - \ln \beta_1$ and $\gamma_j - \gamma_1$ is statistically different from zero. However, this does not guarantee there will be a statistically significant direct effect attributable to any specific water type since the overall F test can be overly sensitive to minor systematic effects common to several water types. The effect due to water type is judged to be statistically significant only if one of the differences $\ln \beta_j - \ln \beta_1$ and/or $\gamma_j - \gamma_1$ is statistically different from zero. This is determined by checking the simultaneous 95% confidence intervals which are constructed for each of these differences. Each true difference can be stated to lie within its respective confidence interval with 95% confidence. If zero is contained within the confidence interval, then there is no evidence that the corresponding difference is significantly different from zero.

If at least one of the confidence intervals for the differences $\ln \beta_j - \ln \beta_1$ or $\gamma_j - \gamma_1$ fails to include zero, then the statistical significance of the effect due to water type has been established. However, establishment of a statistically significant effect due to water type does not necessarily mean that the effect is of practical importance. Practical importance is related to the size and interpretation of the difference.

The interpretation of the differences involves comparing the mean recovery and standard deviation of the $\{X_{ijk}\}$ data for each water type to the mean recovery and standard deviation obtained for distilled water. These comparisons are made on a relative basis. The mean recovery for water type j is given by Equation (11). The mean recovery for water type j is compared to that for distilled water (j=1) on a relative basis by

$$\frac{E(X_{ijk})}{E(X_{i1k})} = \frac{\beta_j \, C_k^{\gamma_j} \, E(L_i \cdot \varepsilon_{ijk})}{\beta_1 \, C_k^{\gamma_1} \, E(L_i \cdot \varepsilon_{i1k})} = \frac{\beta_j}{\beta_1} C_k^{\gamma_j - \gamma_1} \qquad (14)$$

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[The ratio of the standard deviations would be equivalent to Equation (14) and therefore the interpretation of the effect on precision is the same as that for the effect on mean recovery.]

The ratio in Equation (14) is a measure of the relative difference in mean recovery between water type j and distilled water. It is composed of two parts (a) β_j/β_1, which is independent of the true concentration level (i.e., the constant bias) and (b) $C_k^{\gamma_j-\gamma_1}$ which depends upon the true concentration level (i.e., the concentration dependent bias). If $\gamma_j - \gamma_1$ is zero, then the relative difference in mean recovery is just β_j/β_1 which is independent of concentration level C_k. It can then be stated that the mean recovery of water type j is (β_j/β_1) x 100% of the mean recovery for distilled water. If $\gamma_j - \gamma_1$ is not zero, then the mean recovery of water type j is $[(\beta_j/\beta_1)\cdot C_k^{\gamma_j-\gamma_1})$ x 100% of that for distilled water and therefore depends upon the true concentration level C_k.

In order to illustrate these points consider the following example. Suppose that a significant F-value has been obtained and the confidence intervals for all the differences contain zero except for water type 5. For water type 5, the point estimate for $\ln \beta_5 - \ln \beta_1$ is -0.38 and the confidence interval for $\ln \beta_5 - \ln \beta_1$ is (-0.69, -0.07). The point estimate for $\gamma_5 - \gamma_1$ is 0.07, and the confidence interval for $\gamma_5 - \gamma_1$ is (-0.04, 0.18). In this case a statistically significant effect due to water type has been established which involves only water type 5. The practical significance of this effect is judged by considering Equation (14). The ratio of mean recoveries for water type 5 and distilled water is given by

$$\frac{E(X_{i5k})}{E(X_{i1k})} = \frac{\beta_5}{\beta_1} C_k^{\gamma_5-\gamma_1} \qquad (15)$$

and the ratio of the standard deviations is given by

$$\frac{Var(X_{ijk})}{Var(X_{i1k})} = \frac{\beta_5}{\beta_1} C_k^{\gamma_5-\gamma_1} \qquad (16)$$

Since the confidence interval for $\gamma_5 - \gamma_1$ contains zero this difference is assumed to be insignificant and is set to zero. Therefore, Equations (15) and (16) reduce to β_5/β_1. The point estimate for $\ln \beta_5 - \ln \beta^1$ was -0.38. Therefore, the point estimate for β_5/β_1 is 0.68, and the mean recovery for water type 5 is estimated to be 68% of the mean recovery for distilled water. Similarly the standard deviation for the data for water type 5 is

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estimated to be 68% of the standard deviation for distilled water. Since the 95% confidence interval for $\ell n\ \beta_5 - \ell n\ \beta_1$ was (-0.69, -0.07), any value in the interval (0.50, 0.93) is a reasonable estimate for β_5/β_1, and the mean recovery (standard deviation) for water type 5 can be claimed to be from 50% to 93% of the mean recovery (standard deviation) for distilled water. The practical significance of the effect due to water type 5 would depend upon the importance of a mean recovery (standard deviation) which is between 50% and 93% of the mean recovery (standard deviation) observed for distilled water.

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The comparison of accuracy and precision across water types just discussed is based on the assumption that Equation (10) approximately models the data. It is clear that in practical monitoring programs of this type such models cannot model the data completely in every case. This analysis, therefore, is viewed as a screening procedure which identifies those cases where differences in water types are likely to be present. A more detailed, local analysis can then be pursued using the basic summary statistics for precision and accuracy.

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SECTION 5

RESULTS AND CONCLUSIONS

There was a high rejection rate for the data submitted on this study, ranging from 17.6% of the Aroclor 1254 data to 33.8% of the endosulfan sulfate results. These rejections include missing data, data reported as less than some value, rejection of entire sets of data, and statistical outliers rejected according to the criteria stated earlier. Overall, 12,898 values were not included or 25.4% of all data requested.

The summary statistics obtained from the collaborative study data are presented in Tables 3 through 26 for the substances studied. Discussion of the accuracy, precision, and consistency across water types is presented separately in the following sections.

ACCURACY OF THE METHOD

The accuracy of the method is presented in terms of linear regression equations between the true dosing level and the mean recovered amount. The recovery that can be expected for the 24 substances under study is illustrated in Table 27. For this example, the midranges of the concentrations used in this study were inserted into the regression equations and the predicted concentration expressed as a percentage of the midrange. These predicted recoveries at the midrange provide a basis for comparing the recoveries across wastewaters and among substances. Recoveries at other concentrations would vary due to the relative impact of the slope and the intercept of the regression line upon the calculated result.

The substances can be logically divided into three groups: single-compound pesticides, multiple-compound pesticides, and PCB formulations. The recoveries for the single-compound pesticides ranged from a low of 62% to a high of 101% for the first five water types and from 27 to 68% in the sixth water type, industrial effluent 3. The lower recovery from industrial effluent 3 was expected due to the severe emulsion that forms with this effluent, however, and roughly equivalent recoveries were obtained for the study substances from this matrix. There was low recovery

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TABLE 3.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

STATISTICAL SUMMARY FOR ALDRIN ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	13	14	15	15	14	16	14	13	13	14	12	12
TRUE VALUE UG/L	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12
MEAN RECOVERY	.77	1.00	.82	.93	.83	.97	.80	.88	.67	.79	.26	.29
ACCURACY AS % REL ERROR	-18.13	-11.06	-13.31	-17.22	-11.80	-13.11	-15.34	-21.76	-29.78	-29.43	-71.96	-74.09
OVERALL STD DEV (S)	.13	.22	.24	.25	.22	.35	.20	.22	.20	.19	.22	.17
OVERALL REL STD DEV, %	17.15	22.22	31.91	27.13	26.99	36.09	25.41	25.53	30.46	24.45	83.68	57.26
SINGLE STD DEV, (SR)	.16		.21		.20		.18		.10		.11	
ANALYST REL DEV, %	10.98		24.49		22.19		22.02		14.16		39.69	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	14	15	15	15	15	14	14	15	14	15	13	13
TRUE VALUE UG/L	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48
MEAN RECOVERY	3.06	3.97	2.96	3.75	3.17	3.78	2.98	3.38	2.98	3.33	1.26	1.26
ACCURACY AS % REL ERROR	-18.98	-11.45	-21.52	-16.15	-16.17	-15.63	-21.08	-24.54	-23.73	-25.69	-66.55	-71.95
OVERALL STD DEV (S)	.55	.96	.73	.80	.56	.58	.57	1.14	.67	1.02	.74	.71
OVERALL REL STD DEV, %	17.92	24.30	24.58	21.26	17.80	15.30	19.24	33.61	23.10	30.76	59.51	56.82
SINGLE STD DEV, (SR)	.70		.27		.44		.43		.83		.37	
ANALYST REL DEV, %	19.88		8.15		12.53		13.65		26.88		29.13	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	15	15	15	14	16	15	14	15	15	15	14	13
TRUE VALUE UG/L	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60
MEAN RECOVERY	3.77	4.41	3.84	4.62	3.84	4.72	3.68	4.38	3.53	3.93	1.63	1.94
ACCURACY AS % REL ERROR	-20.09	-21.21	-18.56	-17.49	-19.72	-15.68	-21.97	-21.83	-25.24	-29.82	-65.49	-65.36
OVERALL STD DEV (S)	.69	.84	.91	.63	.94	.76	.73	.86	1.29	.84	1.02	1.53
OVERALL REL STD DEV, %	18.41	19.11	23.74	13.60	24.39	16.02	19.82	19.69	36.50	21.48	62.37	78.65
SINGLE STD DEV, (SR)	.40		.73		.64		.74		.65		.80	
ANALYST REL DEV, %	9.72		17.22		15.02		18.27		17.45		44.57	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 4.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR ALPHA-BHC ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	4	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	15	13	16	15	14	12	16	17	14	14	14	12
TRUE VALUE UG/L	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57
MEAN RECOVERY	.46	.47	.43	.56	.48	.49	.53	.63	.40	.57	.31	.33
ACCURACY AS % REL ERROR	-1.84	-17.93	-8.94	-.95	2.19	-13.52	13.48	11.47	-14.67	.20	-33.42	-40.89
OVERALL STD DEV (S)	.08	.13	.07	.14	.14	.08	.18	.25	.08	.13	.14	.09
OVERALL REL STD DEV, %	17.44	26.86	17.02	24.56	28.80	16.19	33.00	39.26	19.79	22.58	45.59	27.47
SINGLE STD DEV, (SR)	.11		.11		.08		.14		.10		.11	
ANALYST REL DEV, %	23.30		21.31		16.39		24.87		20.15		34.50	

MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	13	14	15	14	14	13	17	14	14	11	14	13
TRUE VALUE UG/L	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27
MEAN RECOVERY	1.60	1.84	1.57	1.83	1.55	1.89	1.53	1.79	1.55	1.81	1.13	1.54
ACCURACY AS % REL ERROR	-15.16	-18.71	-16.47	-19.18	-17.53	-16.42	-18.78	-20.94	-17.80	-20.32	-40.09	-32.11
OVERALL STD DEV (S)	.31	.45	.46	.37	.32	.51	.69	.40	.30	.27	.43	.45
OVERALL REL STD DEV, %	19.39	24.27	29.27	20.14	20.79	26.86	45.35	22.32	19.56	14.92	38.07	29.06
SINGLE STD DEV, (SR)	.25		.24		.27		.43		.21		.22	
ANALYST REL DEV, %	14.62		13.82		15.93		26.09		12.48		16.56	

HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	14	15	14	12	14	13	15	17	14	14	14	14
TRUE VALUE UG/L	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97
MEAN RECOVERY	2.80	3.65	2.76	3.58	3.01	3.30	2.80	3.55	2.80	3.56	2.15	2.39
ACCURACY AS % REL ERROR	-14.98	-7.91	-16.08	-9.71	-8.52	-16.88	-14.88	-10.49	-15.00	-10.30	-34.63	-39.77
OVERALL STD DEV (S)	.55	.95	.46	.68	.43	.83	.69	1.08	.52	.84	.63	.80
OVERALL REL STD DEV, %	19.54	26.00	16.82	19.00	14.18	25.09	24.74	30.50	18.50	23.74	29.42	33.31
SINGLE STD DEV, (SR)	.52		.31		.68		.76		.55		.34	
ANALYST REL DEV, %	16.11		9.85		21.51		23.82		17.21		15.04	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 5.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR BETA-BHC ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	16	17	14	15	14	14	15	15	15	15	13	11
TRUE VALUE UG/L	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86
MEAN RECOVERY	1.06	.74	.99	.98	1.08	.81	1.00	.87	.95	.84	.73	.98
ACCURACY AS % REL ERROR	-7.17	-14.72	-13.42	13.92	-5.19	-6.81	-12.40	.79	-16.53	-3.33	-36.41	-32.83
OVERALL STD DEV (S)	.28	.21	.14	.36	.27	.17	.19	.19	.19	.28	.20	.14
OVERALL REL STD DEV, %	26.72	29.01	14.09	36.80	24.61	21.51	19.30	21.93	19.48	33.77	26.99	23.31
SINGLE STD DEV, (SR)	.17		.31		.15		.16		.20		.19	
ANALYST REL DEV, %	19.43		30.97		16.37		16.90		22.82		29.11	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	16	17	15	15	14	14	15	14	15	13	12	12
TRUE VALUE UG/L	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59
MEAN RECOVERY	2.65	2.29	3.05	2.59	2.72	2.24	2.57	2.26	2.58	2.39	2.06	1.95
ACCURACY AS % REL ERROR	-22.87	-11.58	-11.02	-1.49	-20.74	-13.51	-25.09	-12.78	-16.21	-7.62	-39.93	-24.83
OVERALL STD DEV (S)	1.01	.46	.83	.62	.74	.56	.82	.44	1.00	.33	.49	.41
OVERALL REL STD DEV, %	38.01	20.16	27.13	24.36	27.12	24.83	32.00	19.42	34.78	13.76	23.98	21.07
SINGLE STD DEV, (SR)	.54		.45		.49		.50		.54		.34	
ANALYST REL DEV, %	21.67		15.92		19.60		20.86		20.62		17.07	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	14	13	14	13	14	15	15	15	13	13
TRUE VALUE UG/L	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91
MEAN RECOVERY	7.01	6.04	8.15	5.90	7.88	5.66	7.89	5.75	7.63	6.17	6.35	4.50
ACCURACY AS % REL ERROR	-23.41	-12.59	-10.90	-14.60	-13.86	-18.15	-13.80	-16.80	-16.60	-10.71	-33.87	-34.93
OVERALL STD DEV (S)	2.64	1.89	1.69	1.99	1.88	1.60	1.94	1.15	1.87	2.02	1.44	1.44
OVERALL REL STD DEV, %	37.62	31.21	20.73	33.75	23.82	28.34	24.64	19.94	24.48	32.71	23.84	31.93
SINGLE STD DEV, (SR)	1.35		.88		1.04		.99		1.18		.71	
ANALYST REL DEV, %	20.63		12.59		15.36		14.58		17.08		13.55	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 6.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

STATISTICAL SUMMARY FOR GAMMA-BHC ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	14	14	16	16	14	15	16	15	12	14	13	14
TRUE VALUE UG/L	0.48	0.56	0.48	0.56	0.49	0.56	0.48	0.56	0.48	0.56	0.48	0.56
MEAN RECOVERY	.33	.41	.35	.42	.35	.45	.40	.51	.31	.42	.26	.34
ACCURACY AS % REL ERROR	-30.99	-25.59	-25.68	-23.74	-26.25	-19.37	-15.57	-8.47	-35.68	-23.74	-45.27	-39.25
OVERALL STD DEV (S)	.11	.16	.15	.15	.15	.12	.19	.15	.10	.11	.12	.11
OVERALL REL STD DEV, %	32.10	37.52	42.14	38.04	43.71	26.99	48.46	29.33	31.61	25.58	46.62	31.49
SINGLE ANALYST STD DEV, (SR)	.10		.17		.17		.14		.10		.11	
SINGLE ANALYST REL DEV, %	28.01		43.17		42.80		29.79		26.38		36.75	

MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	15	16	15	14	15	15	15	15	12	14	14	14
TRUE VALUE UG/L	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67
MEAN RECOVERY	1.15	1.36	1.07	1.28	1.19	1.28	1.21	1.38	1.16	1.29	.86	1.04
ACCURACY AS % REL ERROR	-19.77	-19.52	-25.25	-23.10	-16.42	-23.42	-15.01	-17.05	-18.62	-22.71	-39.60	-37.74
OVERALL STD DEV (S)	.16	.49	.31	.39	.25	.33	.11	.23	.20	.27	.26	.30
OVERALL REL STD DEV, %	14.33	35.89	29.95	30.60	21.21	25.59	8.68	20.73	16.81	21.26	30.43	28.97
SINGLE ANALYST STD DEV, (SR)	.28		.18		.19		.16		.13		.21	
SINGLE ANALYST REL DEV, %	22.54		15.62		15.54		12.27		10.34		22.33	

HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	16	15	16	14	16	15	14	15	13	13	13	14
TRUE VALUE UG/L	2.96	3.34	2.96	3.34	2.86	3.34	2.86	3.34	2.86	3.34	2.86	3.34
MEAN RECOVERY	2.12	2.77	2.14	2.84	2.27	2.93	2.23	2.77	2.25	2.73	1.71	2.15
ACCURACY AS % REL ERROR	-25.85	-17.07	-25.24	-14.92	-20.43	-15.23	-21.87	-16.84	-21.22	-18.02	-40.07	-35.49
OVERALL STD DEV (S)	.63	.48	.74	.18	.52	.37	.46	.22	.45	.24	.51	.77
OVERALL REL STD DEV, %	29.56	17.43	34.47	6.49	22.99	13.21	20.45	7.75	19.91	8.96	29.74	35.65
SINGLE ANALYST STD DEV, (SR)	.25		.42		.29		.32		.26		.44	
SINGLE ANALYST REL DEV, %	10.27		16.94		11.45		12.95		10.50		22.88	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 7.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR DELTA-BHC ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	16	16	17	16	17	17	15	17	14	14	13	12
TRUE VALUE UG/L	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15
MEAN RECOVERY	.85	1.00	.78	.99	.74	1.04	.78	.95	.74	1.06	.53	.83
ACCURACY AS % REL ERROR	-9.88	-12.98	-17.35	-14.24	-22.07	-9.74	-16.89	-17.82	-21.93	-8.22	-43.39	-27.83
OVERALL STD DEV (S)	.24	.29	.21	.25	.27	.36	.22	.32	.18	.38	.27	.32
OVERALL REL STD DEV, %	28.31	29.16	26.53	27.98	36.32	34.45	28.45	33.70	24.78	36.29	49.86	38.75
SINGLE STD DEV, (SR)	.26		.21		.25		.22		.23		.21	
ANALYST REL DEV, %	27.55		23.71		27.93		25.68		25.95		30.61	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	15	16	17	17	17	17	17	15	14	14	13	13
TRUE VALUE UG/L	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61
MEAN RECOVERY	3.02	3.80	2.90	3.64	2.83	3.58	2.45	3.68	2.95	3.95	2.28	2.95
ACCURACY AS % REL ERROR	-20.08	-17.45	-23.17	-21.00	-25.17	-22.22	-35.13	-20.17	-21.96	-14.30	-39.69	-36.05
OVERALL STD DEV (S)	.60	.87	.67	1.10	.95	1.36	.98	1.08	.59	.76	.73	.99
OVERALL REL STD DEV, %	19.81	22.99	23.19	30.35	33.49	37.99	40.14	29.22	19.97	19.13	31.92	30.29
SINGLE STD DEV, (SR)	.55		.66		.67		.80		.64		.85	
ANALYST REL DEV, %	16.00		20.25		20.77		26.25		18.64		32.65	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	16	16	16	15	17	16	14	17	14	14	14	12
TRUE VALUE UG/L	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76
MEAN RECOVERY	3.91	4.94	4.05	4.77	4.07	5.00	3.72	4.64	3.86	5.17	3.43	3.63
ACCURACY AS % REL ERROR	-17.17	-13.94	-14.10	-17.21	-13.78	-13.23	-21.10	-19.43	-18.18	-10.29	-27.32	-37.01
OVERALL STD DEV (S)	1.38	1.17	1.30	1.73	.99	1.65	1.28	1.55	1.20	1.47	1.73	.92
OVERALL REL STD DEV, %	35.42	23.96	32.19	36.19	24.32	33.10	34.46	33.69	31.14	28.47	50.37	29.39
SINGLE STD DEV, (SR)	1.06		.58		.76		.72		.74		.59	
ANALYST REL DEV, %	23.86		13.24		16.79		17.33		16.31		16.40	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 8.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR 4,4 -DDD ANALYSES BY WATER TYPE

		WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR		2	6	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS		14	17	16	17	15	16	15	16	16	16	17	16
TRUE VALUE UG/L		2.46	3.18	2.46	3.18	2.46	3.18	2.46	3.19	2.46	3.18	2.46	3.18
MEAN RECOVERY		2.42	2.94	2.36	3.12	2.29	3.07	2.49	3.11	2.29	2.97	1.18	1.64
ACCURACY AS % REL ERROR		-1.98	-10.95	-4.16	-2.17	-10.56	-3.60	1.24	-2.17	-7.23	-6.63	-52.18	-48.63
OVERALL STD DEV (S)		.51	.78	.34	.80	.27	.98	.45	.61	.49	.93	.63	.81
OVERALL REL STD DEV, %		21.29	27.51	14.37	25.79	12.43	32.03	18.04	19.45	21.52	31.35	53.96	49.70
SINGLE ANALYST	STD DEV, (SR)	.41		.51		.74		.57		.75		.55	
	REL DEV, %	15.67		18.65		28.01		20.41		28.56		38.83	
MEDIUM YOUDEN PAIR		5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS		15	17	17	17	16	16	16	14	14	16	17	16
TRUE VALUE UG/L		4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37
MEAN RECOVERY		4.69	5.64	4.58	5.42	4.47	5.33	4.58	6.01	4.16	5.59	2.82	3.43
ACCURACY AS % REL ERROR		-4.75	-11.47	-7.13	-14.86	-9.39	-16.32	-7.08	-5.70	-15.65	-12.33	-42.68	-46.13
OVERALL STD DEV (S)		.77	.94	.80	1.10	.80	1.15	1.26	.89	.60	1.12	1.29	1.50
OVERALL REL STD DEV, %		16.43	16.66	17.57	20.23	17.83	21.63	27.61	14.80	14.41	20.10	45.56	43.82
SINGLE ANALYST	STD DEV, (SR)	.58		.69		.74		1.04		.77		1.05	
	REL DEV, %	11.27		13.84		15.16		19.62		15.82		33.53	
HIGH YOUDEN PAIR		3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS		17	17	15	15	15	15	14	16	16	15	17	17
TRUE VALUE UG/L		17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29
MEAN RECOVERY		14.29	19.51	15.80	18.40	15.94	19.47	18.75	19.93	14.71	18.63	9.62	11.25
ACCURACY AS % REL ERROR		-17.13	-12.46	-8.39	-17.43	-7.59	-12.65	8.69	-10.59	-14.73	-16.43	-44.25	-49.53
OVERALL STD DEV (S)		5.26	4.60	2.65	5.57	1.46	5.90	4.51	4.03	3.38	3.28	3.79	5.52
OVERALL REL STD DEV, %		36.83	23.57	16.76	30.28	9.14	30.32	24.07	20.23	22.99	17.59	39.38	49.11
SINGLE ANALYST	STD DEV, (SR)	3.77		2.47		3.20		3.92		1.79		2.46	
	REL DEV, %	22.29		14.47		18.08		20.28		10.71		23.60	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 9.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR 4,4 -DDE ANALYSES BY WATER TYPE

		WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR		2	4	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS		15	16	16	15	15	15	16	16	15	15	15	14
TRUE VALUE UG/L		1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64
MEAN RECOVERY		1.27	1.53	1.17	1.60	1.18	1.51	1.22	1.52	1.03	1.42	.54	.74
ACCURACY AS % REL ERROR		-3.57	-7.00	-10.68	-2.37	-10.37	-7.81	-6.85	-7.61	-21.43	-13.40	-58.99	-55.07
OVERALL STD DEV (S)		.21	.39	.39	.20	.16	.33	.21	.23	.20	.39	.32	.43
OVERALL REL STD DEV, %		16.70	25.73	33.49	12.38	13.28	21.72	17.15	15.50	19.18	27.79	58.71	58.44
SINGLE ANALYST	STD DEV, (SR)	.24		.37		.19		.23		.35		.27	
	REL DEV, %	17.55		26.44		14.10		16.75		28.24		42.86	
MEDIUM YOUDEN PAIR		5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS		15	16	15	16	15	15	17	15	15	15	15	13
TRUE VALUE UG/L		5.25	6.56	5.25	6.56	5.25	6.56	5.25	6.56	5.25	6.56	5.25	6.55
MEAN RECOVERY		4.51	5.53	4.33	5.36	4.25	5.42	4.35	5.41	4.07	4.82	2.68	3.12
ACCURACY AS % REL ERROR		-14.10	-15.68	-17.55	-18.29	-18.92	-17.40	-17.19	-17.60	-22.52	-26.51	-48.96	-52.42
OVERALL STD DEV (S)		1.40	1.06	.90	1.06	.92	1.14	1.17	.95	1.22	1.05	1.26	1.49
OVERALL REL STD DEV, %		31.05	19.10	20.70	19.85	21.51	21.09	26.96	17.64	29.94	21.78	46.94	47.82
SINGLE ANALYST	STD DEV, (SR)	.78		.59		.48		1.23		1.06		1.02	
	REL DEV, %	15.62		12.24		9.95		25.15		23.97		35.15	
HIGH YOUDEN PAIR		3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS		16	16	13	13	15	14	15	16	15	13	15	15
TRUE VALUE UG/L		7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84
MEAN RECOVERY		7.13	8.55	6.83	7.93	7.21	8.26	8.41	8.38	6.44	6.85	4.29	4.61
ACCURACY AS % REL ERROR		-9.46	-12.06	-13.24	-19.38	-8.42	-16.09	6.77	-14.85	-18.25	-30.43	-45.46	-53.14
OVERALL STD DEV (S)		2.15	2.07	1.04	2.45	.95	2.31	2.47	1.26	1.80	.84	2.20	2.06
OVERALL REL STD DEV, %		30.14	23.96	15.26	30.88	13.12	27.99	29.33	14.98	28.02	12.33	51.35	44.65
SINGLE ANALYST	STD DEV, (SR)	1.03		1.08		1.24		1.58		1.19		1.00	
	REL DEV, %	13.01		14.59		16.00		18.88		17.99		22.51	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 10.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR 4,4 -DDT ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	16	15	14	15	16	15	15	16	15	15	15	14
TRUE VALUE UG/L	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64
MEAN RECOVERY	4.42	3.13	4.05	3.80	4.04	3.44	3.97	3.62	3.13	3.03	1.59	1.49
ACCURACY AS % REL ERROR	-.50	-14.12	-8.82	4.29	-8.94	-5.54	-10.51	-.62	-29.44	-16.64	-64.20	-58.95
OVERALL STD DEV (S)	.92	.81	1.57	1.03	.70	.72	.82	1.07	.86	1.01	.96	1.06
OVERALL REL STD DEV, %	20.93	25.90	38.88	27.09	17.19	20.80	20.59	29.58	27.43	33.39	60.53	71.09
SINGLE STD DEV, (SR)	.86		1.21		.70		.95		.85		.73	
ANALYST REL DEV, %	22.78		30.92		18.72		25.06		27.48		47.21	

MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	15	16	16	16	15	16	16	15	15	14	15	14
TRUE VALUE UG/L	8.88	7.28	8.88	7.28	8.88	7.28	8.88	7.28	8.88	7.28	8.88	7.28
MEAN RECOVERY	7.58	6.21	7.64	6.43	7.88	6.90	7.76	6.28	6.87	5.27	4.03	3.58
ACCURACY AS % REL ERROR	-14.65	-14.74	-13.97	-11.72	-11.21	-5.20	-12.59	-13.75	-22.63	-27.56	-54.63	-50.78
OVERALL STD DEV (S)	2.55	1.79	1.99	2.01	1.75	2.19	2.11	1.60	1.56	1.47	2.33	1.91
OVERALL REL STD DEV, %	33.64	28.83	24.75	31.26	22.19	31.67	27.22	25.56	22.76	27.85	57.75	53.34
SINGLE STD DEV, (SR)	2.23		1.79		1.15		1.78		1.27		1.21	
ANALYST REL DEV, %	32.29		25.42		15.57		25.36		20.96		31.90	

HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	16	16	15	14	14	15	14	15	15	14	15	15
TRUE VALUE UG/L	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20
MEAN RECOVERY	20.99	17.50	21.01	17.17	20.25	18.38	23.34	15.71	17.17	14.29	12.48	8.86
ACCURACY AS % REL ERROR	-5.46	-3.85	-5.36	-5.66	-8.76	1.00	5.12	-13.69	-22.66	-21.50	-43.77	-51.33
OVERALL STD DEV (S)	6.66	4.44	6.01	6.72	3.29	6.95	8.25	2.93	4.84	3.70	7.36	5.16
OVERALL REL STD DEV, %	31.74	25.40	28.61	39.12	16.25	37.81	35.34	18.68	28.16	25.87	58.98	58.20
SINGLE STD DEV, (SR)	2.56		3.04		3.14		5.07		2.37		3.48	
ANALYST REL DEV, %	13.29		15.92		16.26		25.95		15.06		32.63	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 11.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 2

STATISTICAL SUMMARY FOR DIELDRIN ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	13	13	13	14	16	15	15	14	13	13	12	13
TRUE VALUE UG/L	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32
MEAN RECOVERY	1.65	1.14	1.44	1.09	1.50	1.11	1.57	1.29	1.41	1.14	.98	.72
ACCURACY AS % REL ERROR	-6.11	-13.57	-17.72	-17.65	-14.63	-15.72	-10.25	-2.62	-19.73	-13.75	-43.91	-45.15
OVERALL STD DEV (S)	.40	.32	.42	.42	.46	.21	.28	.21	.50	.21	.41	.29
OVERALL REL STD DEV, %	24.57	27.82	29.24	38.82	30.68	19.27	17.82	16.45	35.22	18.05	41.30	40.55
SINGLE ANALYST STD DEV, (SR)	.37		.32		.21		.14		.30		.20	
SINGLE ANALYST REL DEV, %	26.50		24.94		16.10		9.82		23.69		23.05	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	12	14	14	14	15	16	15	16	12	13	13	13
TRUE VALUE UG/L	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64
MEAN RECOVERY	3.34	2.48	3.15	2.33	3.08	2.30	3.28	2.29	3.19	2.27	1.91	1.49
ACCURACY AS % REL ERROR	-4.80	-6.01	-10.11	-11.73	-12.22	-12.71	-6.52	-13.25	-8.98	-14.11	-45.61	-43.65
OVERALL STD DEV (S)	.44	.88	.71	.55	.77	.53	.64	.61	.71	.44	.84	.69
OVERALL REL STD DEV, %	13.25	35.48	22.69	23.59	25.01	23.11	19.60	26.74	22.40	19.38	43.81	46.27
SINGLE ANALYST STD DEV, (SR)	.54		.40		.33		.47		.44		.44	
SINGLE ANALYST REL DEV, %	18.50		14.44		12.17		16.95		16.24		26.14	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	13	15	14	15	16	16	15	13	12	12	13	13
TRUE VALUE UG/L	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24
MEAN RECOVERY	10.44	8.23	9.96	8.53	9.75	8.15	9.65	8.90	10.71	8.28	6.83	5.07
ACCURACY AS % REL ERROR	-14.85	-10.96	-19.78	-7.71	-20.46	-11.83	-21.33	-3.70	-12.66	-10.39	-44.29	-45.10
OVERALL STD DEV (S)	1.22	1.81	2.19	1.16	3.05	1.57	1.62	.81	1.67	.77	2.35	2.01
OVERALL REL STD DEV, %	11.69	22.01	22.02	13.62	31.29	19.24	16.75	9.12	15.60	9.30	34.45	39.72
SINGLE ANALYST STD DEV, (SR)	1.39		1.90		2.36		1.40		1.29		1.54	
SINGLE ANALYST REL DEV, %	14.88		16.24		26.38		15.06		13.60		25.81	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 12.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

STATISTICAL SUMMARY FOR ENDOSULFAN I ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	14	14	12	13	15	14	13	13	13	15	13	14
TRUE VALUE UG/L	1.68	1.26	1.68	1.26	1.68	1.26	1.68	1.26	1.68	1.26	1.68	1.26
MEAN RECOVERY	1.59	1.28	1.38	1.24	2.43	1.24	1.65	1.30	1.46	1.13	.84	.86
ACCURACY AS % REL ERROR	-5.23	1.17	-17.62	-1.91	44.70	-1.91	-2.00	2.48	-12.91	-10.70	-50.05	-32.21
OVERALL STD DEV (S)	.43	.27	.18	.21	2.36	.17	.14	.22	.11	.32	.43	.47
OVERALL REL STD DEV, %	26.85	21.10	12.96	16.93	96.94	13.85	8.61	16.81	7.54	28.42	50.82	54.97
SINGLE ANALYST STD DEV, (SR)	.22		.13		1.23		.17		.20		.43	
SINGLE ANALYST REL DEV, %	15.32		9.63		66.98		11.88		15.59		50.59	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	14	15	14	15	15	14	14	13	15	15	13	16
TRUE VALUE UG/L	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79
MEAN RECOVERY	4.94	4.00	4.63	3.30	4.90	3.57	4.94	3.68	4.55	3.42	2.86	2.33
ACCURACY AS % REL ERROR	-1.93	5.52	-8.06	-12.97	-2.81	-5.85	-1.93	-2.97	-9.70	-9.70	-43.24	-38.68
OVERALL STD DEV (S)	.91	.89	.61	.61	.59	.47	.58	.43	1.09	.78	.85	1.36
OVERALL REL STD DEV, %	18.32	22.35	13.06	18.47	11.76	13.28	11.66	11.78	23.93	22.65	29.81	58.59
SINGLE ANALYST STD DEV, (SR)	.58		.40		.46		.40		.55		.86	
SINGLE ANALYST REL DEV, %	12.95		10.02		10.84		9.17		13.79		33.14	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	15	14	15	15	15	16	12	14	14	15	15	15
TRUE VALUE UG/L	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11
MEAN RECOVERY	12.22	10.03	11.59	9.79	11.74	9.59	11.64	9.98	11.41	9.33	7.83	5.91
ACCURACY AS % REL ERROR	-9.05	-.84	-13.76	-3.31	-12.64	-5.16	-13.39	-1.29	-15.13	-7.75	-41.77	-41.54
OVERALL STD DEV (S)	2.22	1.77	2.16	1.22	1.91	1.86	.95	1.71	1.35	1.83	3.29	3.44
OVERALL REL STD DEV, %	18.15	17.51	18.63	12.52	16.24	19.42	8.15	17.12	11.86	19.65	42.02	58.21
SINGLE ANALYST STD DEV, (SR)	1.16		1.57		2.25		1.54		1.06		1.16	
SINGLE ANALYST REL DEV, %	10.45		14.66		21.09		14.21		10.25		16.88	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 13.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 2

STATISTICAL SUMMARY FOR ENDOSULFAN II ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	15	12	15	14	14	13	17	16	13	13	12	14
TRUE VALUE UG/L	2.90	2.27	2.90	2.27	2.90	2.27	2.90	2.27	2.90	2.27	2.90	2.27
MEAN RECOVERY	2.81	2.51	2.35	2.26	2.13	2.14	3.21	2.50	2.88	2.28	1.77	1.78
ACCURACY AS % REL ERROR	-.40	10.30	-19.77	-.37	-23.88	-5.61	14.81	10.23	3.02	.33	-36.93	-21.56
OVERALL STD DEV (S)	1.28	.91	1.09	.79	.80	.55	1.64	.67	1.67	.88	.97	1.02
OVERALL REL STD DEV, %	45.60	35.12	48.36	35.04	37.62	25.44	51.02	26.58	57.90	38.75	55.15	57.39
SINGLE ANALYST STD DEV, (SR)	.38		.63		.56		1.06		.94		.51	
SINGLE ANALYST REL DEV, %	14.43		27.74		26.39		36.99		36.27		29.01	

MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	15	15	15	15	15	14	16	16	13	13	13	13
TRUE VALUE UG/L	5.60	4.54	5.60	4.54	5.60	4.54	5.60	4.54	5.60	4.54	5.60	4.54
MEAN RECOVERY	5.77	4.61	5.61	3.89	5.34	3.50	5.71	4.11	5.51	4.26	3.75	3.26
ACCURACY AS % REL ERROR	2.97	1.40	.10	-14.45	6.12	-22.98	2.03	-9.54	-1.56	-6.20	-33.05	-28.20
OVERALL STD DEV (S)	2.70	1.73	2.04	1.91	1.88	1.41	2.30	1.58	2.01	1.95	2.47	2.01
OVERALL REL STD DEV, %	46.87	37.57	36.35	49.01	31.60	40.39	40.32	38.38	36.44	45.64	65.77	61.60
SINGLE ANALYST STD DEV, (SR)	1.80		1.48		1.41		1.24		1.25		.74	
SINGLE ANALYST REL DEV, %	34.79		31.21		29.78		25.17		25.51		21.24	

HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	14	14	14	13	13	12	16	16	12	11	14	14
TRUE VALUE UG/L	14.00	11.36	14.00	11.36	14.00	11.36	14.00	11.36	14.00	11.36	14.00	11.36
MEAN RECOVERY	12.34	11.60	11.95	10.22	11.35	9.82	13.87	12.02	12.11	9.51	9.24	7.85
ACCURACY AS % REL ERROR	-11.84	2.58	-14.63	-10.06	-18.92	-13.59	-.94	5.85	-13.51	-16.29	-34.02	-30.92
OVERALL STD DEV (S)	5.61	5.34	3.89	2.39	3.59	1.12	4.91	4.29	3.46	2.11	5.50	5.67
OVERALL REL STD DEV, %	45.45	46.07	32.52	22.99	31.55	11.39	35.40	35.64	28.58	22.15	59.56	72.25
SINGLE ANALYST STD DEV, (SR)	3.82		1.64		2.19		1.47		.80		1.49	
SINGLE ANALYST REL DEV, %	31.94		14.82		20.74		11.35		7.42		17.48	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 14.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR ENDOSULFAN SULFATE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	13	14	13	13	12	13	14	14	11	13	14	14
TRUE VALUE UG/L	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86
MEAN RECOVERY	3.80	3.27	3.91	3.76	3.64	2.89	5.19	2.43	3.36	3.25	3.33	2.72
ACCURACY AS % REL ERROR	-23.20	-15.43	-21.12	-2.79	-26.49	-25.27	4.86	-37.23	-32.20	-15.79	-32.84	-29.67
OVERALL STD DEV (S)	1.47	1.07	1.15	.89	.93	.87	2.70	1.17	.66	1.21	1.71	1.46
OVERALL REL STD DEV, %	38.66	32.88	29.46	23.77	25.52	30.08	52.08	49.36	19.60	37.22	51.55	53.70
SINGLE STD DEV, (SR)	.82		.62		.78		2.02		.78		.88	
ANALYST REL DEV, %	23.18		16.26		23.98		53.13		23.57		29.23	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	12	13	14	14	14	14	14	14	12	13	15	13
TRUE VALUE UG/L	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59
MEAN RECOVERY	11.95	9.55	13.15	9.87	12.56	9.32	12.48	9.97	11.39	9.01	9.57	7.01
ACCURACY AS % REL ERROR	-19.56	-17.62	-11.47	-14.81	-15.46	-19.62	-15.97	-13.97	-23.30	-22.24	-35.56	-39.54
OVERALL STD DEV (S)	2.37	2.03	4.34	2.15	3.24	2.22	5.41	3.73	2.68	2.73	2.29	2.53
OVERALL REL STD DEV, %	23.98	21.26	33.01	21.87	25.82	23.86	43.37	37.45	23.55	30.34	23.94	36.10
SINGLE STD DEV, (SR)	1.12		1.97		1.27		2.53		2.03		1.55	
ANALYST REL DEV, %	10.45		17.12		11.64		22.52		19.92		18.71	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	13	14	12	12	13	12	13	14	12	13	14	15
TRUE VALUE UG/L	29.71	23.18	29.71	23.18	29.71	23.18	29.71	23.18	29.71	23.18	29.71	23.18
MEAN RECOVERY	26.08	22.54	26.57	20.44	26.02	19.51	24.93	21.72	25.01	19.02	19.24	13.33
ACCURACY AS % REL ERROR	-12.22	-2.78	-10.59	-11.85	-12.43	-15.86	-16.09	-6.32	-15.83	-17.98	-35.24	-42.49
OVERALL STD DEV (S)	6.51	7.56	5.91	5.59	3.74	6.12	8.86	9.46	5.24	9.63	9.31	6.39
OVERALL REL STD DEV, %	24.97	33.54	22.26	27.37	14.36	31.38	35.55	43.55	20.96	50.66	48.40	47.90
SINGLE STD DEV, (SR)	4.45		3.28		3.61		8.49		6.85		3.69	
ANALYST REL DEV, %	18.31		13.98		15.85		36.40		31.11		22.68	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 15.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

STATISTICAL SUMMARY FOR ENDRIN ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	14	14	13	14	14	17	16	14	15	14	12	13
TRUE VALUE UG/L	2.15	2.82	2.15	2.82	2.15	2.82	2.15	2.82	2.15	2.82	2.15	2.82
MEAN RECOVERY	1.64	2.86	2.08	2.85	2.42	2.86	2.31	2.73	1.95	2.82	1.39	1.60
ACCURACY AS % REL ERROR	-23.62	1.18	-3.45	.93	12.38	1.38	7.54	-3.43	-9.23	-.16	-35.37	-43.26
OVERALL STD DEV (S)	.58	.95	.38	1.05	1.30	1.11	.64	1.16	.66	.64	.77	.65
OVERALL REL STD DEV, %	35.54	33.09	18.20	36.85	53.69	38.70	27.56	42.46	33.90	22.82	55.58	40.57
SINGLE STD DEV, (SR)	.65		.61		1.00		.90		.36		.48	
ANALYST REL DEV, %	28.85		24.60		37.96		35.55		15.08		31.98	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	15	15	14	14	17	17	17	17	13	15	13	14
TRUE VALUE UG/L	8.46	8.47	8.46	8.47	8.46	8.47	8.46	8.47	8.46	8.47	8.46	8.47
MEAN RECOVERY	5.74	7.42	6.13	7.43	6.47	7.39	7.24	7.65	5.58	7.92	3.30	4.59
ACCURACY AS % REL ERROR	-11.16	-12.42	-5.13	-12.27	.19	-12.81	12.17	-9.67	-12.01	-6.55	-48.96	-45.99
OVERALL STD DEV (S)	2.55	2.01	1.64	1.25	1.31	2.15	1.78	2.28	.98	1.99	1.47	2.62
OVERALL REL STD DEV, %	44.54	27.03	26.71	16.76	20.32	29.17	24.61	29.82	17.32	25.15	44.51	57.33
SINGLE STD DEV, (SR)	2.07		1.22		1.37		2.18		1.48		1.13	
ANALYST REL DEV, %	31.40		17.99		19.80		29.22		21.81		28.62	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	12	14	14	13	17	17	15	17	15	15	14	14
TRUE VALUE UG/L	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59
MEAN RECOVERY	14.16	20.38	14.38	19.96	15.31	21.82	16.01	23.30	15.28	22.90	10.49	12.99
ACCURACY AS % REL ERROR	-17.75	-9.80	-15.47	-11.64	-11.06	-3.43	-6.99	3.14	-11.23	1.34	-39.05	-42.56
OVERALL STD DEV (S)	2.37	4.32	3.71	3.16	6.54	8.78	3.48	10.93	5.76	7.03	4.26	7.00
OVERALL REL STD DEV, %	16.77	21.22	25.80	15.83	42.69	40.23	21.75	46.90	37.66	30.59	40.40	53.90
SINGLE STD DEV, (SR)	2.58		3.38		6.63		4.73		4.00		3.57	
ANALYST REL DEV, %	14.95		19.66		35.70		24.04		20.97		30.44	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 16.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

STATISTICAL SUMMARY FOR HEPTACHLOR ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
NUMBER OF DATA POINTS	13	14	17	17	13	16	16	15	15	15	12	11
TRUE VALUE UG/L	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54
MEAN RECOVERY	.32	.44	.33	.39	.34	.44	.35	.36	.37	.34	.15	.08
ACCURACY AS % REL ERROR	-28.54	-18.74	-26.63	-27.19	-22.90	-18.80	-20.78	-33.59	-16.65	-36.94	-66.04	-85.74
OVERALL STD DEV (S)	.11	.18	.14	.16	.08	.19	.17	.12	.30	.16	.12	.04
OVERALL REL STD DEV, %	34.44	41.38	42.95	40.60	23.60	42.68	47.21	33.75	80.67	47.08	77.54	53.70
SINGLE STD DEV, (SR)	.16		.12		.08		.14		.16		.09	
ANALYST REL DEV, %	42.52		34.76		20.71		39.47		44.13		75.24	

MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	14	14	16	17	15	16	15	15	14	15	13	13
TRUE VALUE UG/L	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07
MEAN RECOVERY	.66	.81	.70	.83	.71	.86	.62	.68	.68	.63	.29	.24
ACCURACY AS % REL ERROR	-26.38	-24.00	-21.60	-22.78	-20.84	-19.75	-30.61	-36.60	-23.50	-41.24	-67.32	-78.02
OVERALL STD DEV (S)	.19	.24	.21	.29	.22	.35	.23	.27	.30	.28	.25	.20
OVERALL REL STD DEV, %	29.77	29.79	29.81	34.59	31.23	41.08	37.01	39.64	43.39	44.65	84.30	86.95
SINGLE STD DEV, (SR)	.14		.18		.20		.14		.19		.14	
ANALYST REL DEV, %	19.18		23.72		25.26		20.85		29.09		54.75	

HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
NUMBER OF DATA POINTS	13	13	17	16	15	15	15	16	15	15	13	13
TRUE VALUE UG/L	2.68	3.22	2.68	3.22	2.68	3.22	2.68	3.22	2.68	3.22	2.68	3.22
MEAN RECOVERY	1.79	2.26	2.03	2.53	1.88	2.48	1.82	2.29	1.68	1.95	.89	.80
ACCURACY AS % REL ERROR	-33.38	-29.67	-24.08	-21.38	-29.88	-22.91	-31.93	-28.85	-37.12	-39.13	-66.70	-75.17
OVERALL STD DEV (S)	.30	.38	.71	.49	.48	.33	.33	.56	.75	.59	.89	.58
OVERALL REL STD DEV, %	16.99	14.89	34.91	18.98	25.41	13.45	18.15	24.61	44.32	30.06	100.30	72.89
SINGLE STD DEV, (SR)	.30		.40		.30		.43		.51		.55	
ANALYST REL DEV, %	14.93		17.51		13.96		20.70		28.23		64.97	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 17.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

STATISTICAL SUMMARY FOR HEPTACHLOR EPOXIDE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	4	2	6	2	6	2	6	2	6	2	6
NUMBER OF DATA POINTS	16	16	17	15	15	15	15	17	16	16	15	14
TRUE VALUE UG/L	1.10	0.87	1.10	0.87	1.10	0.87	1.10	0.87	1.10	0.87	1.10	0.87
MEAN RECOVERY	1.10	.86	1.00	.82	1.04	.85	1.01	.85	1.00	.86	.55	.48
ACCURACY AS % REL ERROR	.06	-1.05	-9.52	-5.50	-5.85	-3.05	-8.18	-2.73	-9.82	-1.94	-49.77	-44.60
OVERALL STD DEV (S)	.17	.15	.27	.09	.20	.18	.17	.12	.23	.18	.26	.28
OVERALL REL STD DEV, %	15.80	17.32	27.26	11.30	19.21	21.15	17.08	14.34	23.40	20.81	45.97	58.70
SINGLE STD DEV, (SR)	.05		.19		.13		.15		.21		.24	
ANALYST REL DEV, %	6.55		21.19		13.94		15.82		22.88		45.88	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	15	17	17	17	15	15	15	15	16	16	15	14
TRUE VALUE UG/L	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49
MEAN RECOVERY	4.03	3.04	3.68	2.91	3.68	3.06	3.57	3.02	3.78	3.30	2.33	1.94
ACCURACY AS % REL ERROR	-8.65	-12.94	-16.77	-16.63	-16.68	-12.37	-19.23	-13.49	-14.45	-5.26	-47.21	-44.30
OVERALL STD DEV (S)	.79	.40	.72	.83	.65	.72	.56	.56	.70	.52	.78	.73
OVERALL REL STD DEV, %	19.67	19.70	19.56	28.47	17.75	23.40	15.79	18.59	18.40	15.64	33.51	40.26
SINGLE STD DEV, (SR)	.51		.62		.42		.47		.56		.62	
ANALYST REL DEV, %	14.43		18.85		12.45		14.27		15.88		29.22	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
NUMBER OF DATA POINTS	17	17	15	14	15	13	14	16	15	14	15	15
TRUE VALUE UG/L	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23
MEAN RECOVERY	5.85	5.07	5.97	4.36	6.20	4.16	5.96	4.39	5.91	4.50	3.57	2.77
ACCURACY AS % REL ERROR	-11.63	-3.03	-9.93	-16.64	-6.40	-20.41	-10.00	-16.12	-10.81	-13.92	-46.13	-47.04
OVERALL STD DEV (S)	1.78	1.09	1.10	1.07	.91	1.04	1.40	.66	1.48	.69	1.45	.99
OVERALL REL STD DEV, %	30.37	21.56	18.41	24.63	14.64	25.01	23.45	15.04	25.01	15.26	40.67	35.77
SINGLE STD DEV, (SR)	.88		.67		.64		.80		.88		.61	
ANALYST REL DEV, %	16.17		13.04		12.43		15.41		16.86		19.25	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 18.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 3

STATISTICAL SUMMARY FOR CHLORDANE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	3	6	3	6	3	6	3	6	3	6	3	6
NUMBER OF DATA POINTS	16	15	18	17	16	16	16	16	13	14	14	14
TRUE VALUE UG/L	10.59	8.49	10.59	8.49	10.59	8.49	10.59	8.49	10.59	8.49	10.59	8.49
MEAN RECOVERY	8.78	6.80	8.61	5.87	7.95	6.40	8.66	6.27	8.27	6.23	4.96	3.67
ACCURACY AS % REL ERROR	-17.09	-19.89	-18.68	-30.79	-24.90	-24.55	-18.25	-26.12	-21.94	-26.56	-53.18	-56.79
OVERALL STD DEV (S)	1.70	1.49	2.98	1.66	1.68	1.31	2.01	1.46	.94	1.33	2.19	1.82
OVERALL REL STD DEV, %	19.41	21.74	34.61	28.29	21.07	20.50	23.22	23.33	11.34	21.27	44.23	49.65
SINGLE STD DEV, (SR)	1.18		1.68		.97		1.27		.73		1.30	
ANALYST REL DEV, %	15.15		23.14		13.44		17.05		10.04		30.02	
MEDIUM YOUDEN PAIR	5	2	5	2	5	2	5	2	5	2	5	2
NUMBER OF DATA POINTS	14	16	18	18	14	16	17	18	14	15	14	13
TRUE VALUE UG/L	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95
MEAN RECOVERY	35.09	27.98	31.13	25.17	34.30	26.85	33.24	30.62	32.44	25.09	16.41	16.21
ACCURACY AS % REL ERROR	-17.19	-17.87	-26.52	-17.04	-19.04	-20.92	-21.55	-9.82	-23.43	-26.09	-61.27	-52.25
OVERALL STD DEV (S)	6.96	4.98	11.26	6.79	3.72	6.15	12.36	12.55	7.37	6.08	7.37	7.15
OVERALL REL STD DEV, %	19.83	17.86	36.16	24.12	10.83	22.92	37.18	41.03	22.71	24.22	44.90	44.11
SINGLE STD DEV, (SR)	4.22		5.77		3.90		5.31		3.89		4.63	
ANALYST REL DEV, %	13.39		19.48		12.74		16.63		13.51		28.37	
HIGH YOUDEN PAIR	1	4	1	4	1	4	1	4	1	4	1	4
NUMBER OF DATA POINTS	16	15	18	17	16	16	18	18	15	15	14	14
TRUE VALUE UG/L	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44
MEAN RECOVERY	41.45	35.57	39.49	33.59	42.15	34.93	38.01	36.36	39.05	30.79	22.55	16.85
ACCURACY AS % REL ERROR	-21.73	-16.19	-25.43	-20.85	-20.40	-17.70	-28.24	-14.33	-26.26	-27.45	-57.42	-60.30
OVERALL STD DEV (S)	10.77	3.93	11.60	6.85	9.53	6.45	11.89	13.42	10.73	8.06	11.19	5.63
OVERALL REL STD DEV, %	25.99	11.05	29.36	20.41	22.60	18.45	31.27	36.92	27.48	26.16	49.64	33.43
SINGLE STD DEV, (SR)	5.46		6.53		3.89		12.68		5.77		7.47	
ANALYST REL DEV, %	14.18		17.87		10.10		34.11		16.51		37.94	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 19.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

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EPA METHOD VALIDATION STUDY-SPI PESTICIDES, PCBS 4

STATISTICAL SUMMARY FOR TOXAPHENE ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	6	2	6	2	6	2	6	2	6	2	6	2
NUMBER OF DATA POINTS	15	15	17	17	17	17	16	16	17	16	13	13
TRUE VALUE UG/L	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05
MEAN RECOVERY	48.03	39.47	46.31	42.05	46.78	39.35	45.05	37.34	42.53	39.48	25.81	22.49
ACCURACY AS % REL ERROR	-16.50	-15.25	-19.50	-10.62	-18.65	-16.35	-21.69	-20.64	-26.06	-16.08	-55.12	-52.21
OVERALL STD DEV (S)	9.55	9.28	7.71	12.44	8.12	11.25	10.80	11.16	14.72	17.93	10.10	11.70
OVERALL REL STD DEV, %	19.89	20.76	16.64	29.68	17.36	28.58	23.97	29.89	34.61	45.42	39.14	52.05
SINGLE STD DEV, (SR)	7.37		8.72		7.93		4.13		8.03		8.69	
ANALYST REL DEV, %	16.77		19.73		18.42		10.02		19.59		36.00	

MEDIUM YOUDEN PAIR	4	3	4	3	4	3	4	3	4	3	4	3
NUMBER OF DATA POINTS	16	16	16	16	17	16	16	15	17	16	13	13
TRUE VALUE UG/L	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14
MEAN RECOVERY	137.38	115.59	152.04	118.96	148.41	109.38	144.31	112.55	126.84	108.58	75.03	64.92
ACCURACY AS % REL ERROR	-20.39	-21.65	-11.89	-15.72	-14.00	-22.51	-16.37	-20.26	-26.50	-23.07	-56.52	-54.00
OVERALL STD DEV (S)	27.29	22.45	34.12	25.13	48.69	22.02	42.86	21.13	33.74	21.14	35.53	25.41
OVERALL REL STD DEV, %	19.86	20.48	22.44	21.12	32.81	20.13	29.70	18.77	26.60	19.47	47.35	39.14
SINGLE STD DEV, (SR)	12.31		15.32		27.86		21.80		21.10		17.68	
ANALYST REL DEV, %	9.93		11.31		21.62		16.97		17.93		25.27	

HIGH YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
NUMBER OF DATA POINTS	16	16	17	17	16	17	16	16	17	17	12	13
TRUE VALUE UG/L	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34
MEAN RECOVERY	332.50	271.89	343.25	270.79	303.52	266.71	328.89	247.35	294.91	236.69	163.05	146.25
ACCURACY AS % REL ERROR	-17.42	-17.44	-14.75	-17.78	-24.62	-19.01	-18.32	-24.89	-29.24	-28.13	-59.50	-55.59
OVERALL STD DEV (S)	72.23	49.00	69.07	56.60	79.10	50.86	60.84	61.22	69.22	71.67	80.66	60.71
OVERALL REL STD DEV, %	21.72	18.02	20.12	20.90	26.06	19.07	18.50	24.75	24.29	30.29	49.47	41.51
SINGLE STD DEV, (SR)	34.53		40.51		52.34		35.14		50.23		40.98	
ANALYST REL DEV, %	11.43		13.19		18.36		12.20		19.26		26.50	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 20.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 9

STATISTICAL SUMMARY FOR AROCLOR 1016 ANALYSES BY WATER TYPE

		WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR		2	1	2	1	2	1	2	1	2	1	2	1
NUMBER OF DATA POINTS		15	15	13	15	13	14	15	15	15	14	15	15
TRUE VALUE UG/L		10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86
MEAN RECOVERY		8.60	12.21	9.40	12.01	9.51	11.33	9.43	11.67	9.22	10.54	6.05	7.53
ACCURACY AS % REL ERROR		-16.10	-11.90	-19.05	-13.33	-7.19	-18.24	-7.99	-15.76	-10.06	-23.96	-40.93	-45.67
OVERALL STD DEV (S)		1.69	2.51	1.44	2.12	2.77	1.87	3.10	2.41	2.03	2.11	2.71	2.95
OVERALL REL STD DEV, %		19.67	20.40	17.10	17.67	29.11	16.51	32.89	20.68	22.01	20.01	44.71	39.25
SINGLE ANALYST	STD DEV, (SR)	1.55		1.73		1.83		1.67		1.76		1.49	
	REL DEV, %	14.86		16.96		17.57		15.83		17.82		21.95	
MEDIUM YOUDEN PAIR		4	3	4	3	4	3	4	3	4	3	4	3
NUMBER OF DATA POINTS		15	15	15	15	15	13	14	13	15	14	15	15
TRUE VALUE UG/L		40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52
MEAN RECOVERY		33.41	44.35	34.84	48.14	33.61	46.45	35.88	44.62	34.51	40.13	22.91	26.11
ACCURACY AS % REL ERROR		-18.49	-20.11	-15.01	-13.29	-18.00	-16.34	-12.47	-19.63	-15.81	-27.72	-44.10	-52.97
OVERALL STD DEV (S)		5.38	7.28	6.04	7.19	7.22	3.72	6.27	6.30	5.68	11.45	9.25	14.72
OVERALL REL STD DEV, %		16.11	16.41	17.33	14.94	21.47	8.01	17.49	14.12	16.45	28.54	40.35	56.39
SINGLE ANALYST	STD DEV, (SR)	5.49		4.30		4.17		5.02		8.86		9.23	
	REL DEV, %	14.11		10.35		10.42		12.47		23.73		37.67	
HIGH YOUDEN PAIR		6	5	6	5	6	5	6	5	6	5	6	5
NUMBER OF DATA POINTS		15	15	15	16	15	15	14	15	15	14	15	15
TRUE VALUE UG/L		61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28
MEAN RECOVERY		51.60	69.10	53.25	72.39	50.24	68.55	51.42	66.05	46.54	64.94	31.92	44.12
ACCURACY AS % REL ERROR		-16.08	-19.23	-13.40	-13.07	-18.30	-17.69	-16.38	-20.69	-24.14	-22.03	-48.09	-47.02
OVERALL STD DEV (S)		6.19	13.46	5.05	15.02	9.88	11.72	6.10	10.93	9.46	8.00	15.11	19.92
OVERALL REL STD DEV, %		12.00	19.77	9.49	20.75	19.67	17.10	11.86	16.55	20.27	12.32	47.33	45.14
SINGLE ANALYST	STD DEV, (SR)	8.06		11.23		7.56		7.51		8.92		11.21	
	REL DEV, %	13.47		17.87		12.73		12.79		15.99		29.48	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE 21.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

STATISTICAL SUMMARY FOR AROCLOR 1221 ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	6	2	6	2	6	2	6	2	6	2	6	2
NUMBER OF DATA POINTS	15	13	14	15	16	15	15	16	16	15	14	14
TRUE VALUE UG/L	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91
MEAN RECOVERY	31.21	22.53	25.39	22.60	30.05	21.89	29.29	29.60	28.50	24.57	20.57	14.43
ACCURACY AS % REL ERROR	-2.06	-5.79	-20.32	-5.51	-5.69	-8.46	-8.07	23.77	-10.57	2.75	-35.44	-39.64
OVERALL STD DEV (S)	11.64	6.11	9.23	7.64	13.74	8.68	14.14	17.19	12.57	7.64	11.47	5.92
OVERALL REL STD DEV, %	37.29	27.11	32.43	33.79	45.73	39.63	48.27	58.08	44.10	31.11	55.78	41.02
SINGLE STD DEV, (SR)	7.33		4.74		10.86		12.17		9.85		6.23	
ANALYST REL DEV, %	27.27		19.77		41.80		41.32		37.14		35.59	
MEDIUM YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
NUMBER OF DATA POINTS	16	16	15	16	15	16	16	14	15	16	14	16
TRUE VALUE UG/L	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81
MEAN RECOVERY	63.36	51.88	53.26	44.92	53.29	44.02	55.16	47.36	47.09	38.06	34.69	25.71
ACCURACY AS % REL ERROR	-.58	8.51	-16.43	-6.04	-16.37	-7.93	-13.45	-.93	-26.11	-20.38	-45.56	-46.23
OVERALL STD DEV (S)	20.19	23.25	13.57	19.82	13.04	18.00	21.25	15.42	17.60	12.05	15.94	13.89
OVERALL REL STD DEV, %	31.87	44.82	25.48	44.12	24.46	40.88	38.52	32.56	37.37	31.65	45.95	54.03
SINGLE STD DEV, (SR)	15.00		11.93		9.97		11.36		9.96		10.95	
ANALYST REL DEV, %	26.03		24.30		20.49		22.16		23.39		36.26	
HIGH YOUDEN PAIR	4	1	4	1	4	1	4	1	4	1	4	1
NUMBER OF DATA POINTS	16	15	16	16	16	16	15	16	16	16	16	16
TRUE VALUE UG/L	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47
MEAN RECOVERY	177.54	132.99	151.39	131.27	152.00	132.40	169.55	140.03	155.56	125.73	109.01	91.61
ACCURACY AS % REL ERROR	-7.14	-7.31	-20.81	-8.50	-20.49	-7.72	-11.32	-2.40	-18.63	-12.37	-42.98	-36.01
OVERALL STD DEV (S)	65.60	34.52	71.38	36.05	70.50	55.64	40.19	39.71	65.15	39.87	63.23	49.13
OVERALL REL STD DEV, %	36.95	25.96	47.15	27.46	46.38	42.02	23.70	28.36	41.88	31.71	58.00	53.51
SINGLE STD DEV, (SR)	46.91		41.44		43.86		22.94		40.54		44.31	
ANALYST REL DEV, %	30.21		29.32		30.84		14.82		28.82		44.13	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 22.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 6

STATISTICAL SUMMARY FOR AROCLOR 1232 ANALYSES BY WATER TYPE

		WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR		4	3	4	3	4	3	4	3	4	3	4	3
NUMBER OF DATA POINTS		16	16	13	13	12	14	13	14	15	14	14	14
TRUE VALUE UG/L		24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77
MEAN RECOVERY		35.84	35.58	25.61	27.52	27.11	32.40	29.67	34.52	25.04	26.49	13.34	15.66
ACCURACY AS % REL ERROR		44.70	15.64	3.40	-10.57	9.44	5.31	19.77	12.18	1.09	-13.91	-46.14	-49.09
OVERALL STD DEV (S)		17.64	13.52	9.83	7.39	7.15	10.35	10.67	12.57	6.54	5.73	7.26	7.71
OVERALL REL STD DEV, %		49.21	38.00	34.47	26.85	26.37	31.93	35.96	36.43	27.32	21.63	54.41	49.22
SINGLE ANALYST	STD DEV, (SR)	6.57		5.24		6.14		3.88		4.59		1.71	
	REL DEV, %	18.40		19.71		20.62		12.10		17.80		11.77	
MEDIUM YOUDEN PAIR		1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS		17	16	15	15	15	15	14	15	16	16	15	15
TRUE VALUE UG/L		49.54	61.54	49.54	61.54	49.54	61.54	49.54	61.54	49.54	61.54	49.54	61.54
MEAN RECOVERY		51.48	67.63	49.28	59.10	49.49	63.84	50.38	63.04	50.16	66.88	32.27	44.74
ACCURACY AS % REL ERROR		3.93	9.91	-.52	-3.95	-.10	3.75	1.71	2.45	1.26	8.69	-34.85	-27.29
OVERALL STD DEV (S)		18.44	18.63	19.72	19.76	20.08	14.55	7.28	18.10	17.40	18.61	16.02	20.52
OVERALL REL STD DEV, %		35.81	27.54	40.03	33.44	40.37	22.79	14.44	28.71	34.68	27.83	49.63	45.86
SINGLE ANALYST	STD DEV, (SR)	7.29		12.58		10.15		10.95		8.83		8.33	
	REL DEV, %	12.25		23.20		17.90		19.31		15.09		21.64	
HIGH YOUDEN PAIR		6	5	6	5	6	5	6	5	6	5	5	5
NUMBER OF DATA POINTS		16	17	15	15	15	14	15	15	15	16	13	14
TRUE VALUE UG/L		148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61
MEAN RECOVERY		151.03	182.04	137.81	166.17	153.50	181.42	140.33	168.18	131.38	157.75	74.68	91.97
ACCURACY AS % REL ERROR		1.63	-1.39	-7.27	-9.99	3.29	-1.73	-5.57	-8.90	-11.59	-14.55	-49.74	-50.18
OVERALL STD DEV (S)		50.66	71.40	48.52	76.32	44.90	70.98	50.66	70.67	58.72	65.78	36.02	57.61
OVERALL REL STD DEV, %		33.55	39.22	35.21	45.93	29.25	39.13	36.10	42.02	44.69	41.70	48.23	62.64
SINGLE ANALYST	STD DEV, (SR)	37.90		43.19		44.48		40.48		40.22		19.42	
	REL DEV, %	22.76		28.42		26.56		26.25		27.82		23.30	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 23.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

STATISTICAL SUMMARY FOR AROCLOR 1242 ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
NUMBER OF DATA POINTS	15	15	14	15	15	17	16	16	15	15	15	15
TRUE VALUE UG/L	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12
MEAN RECOVERY	12.78	14.03	11.67	13.72	11.95	14.70	14.49	14.23	11.93	14.27	7.50	9.33
ACCURACY AS % REL ERROR	-1.85	-7.19	-10.36	-9.26	-8.96	-2.79	11.23	-5.88	-8.38	-5.64	-42.40	-44.89
OVERALL STD DEV (S)	3.50	4.44	2.11	3.03	2.84	5.79	5.13	4.85	3.69	3.80	3.34	5.80
OVERALL REL STD DEV, %	27.41	31.64	18.05	22.06	23.97	39.40	35.38	34.06	30.91	26.63	44.81	69.64
SINGLE ANALYST STD DEV, (SR)	2.61		2.33		1.94		3.15		2.64		3.62	
SINGLE ANALYST REL DEV, %	19.50		18.39		14.65		21.96		20.13		45.72	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	15	15	14	16	17	15	17	17	15	14	15	15
TRUE VALUE UG/L	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24
MEAN RECOVERY	26.73	29.11	24.55	32.89	27.17	26.24	26.17	33.68	23.71	27.80	13.72	15.67
ACCURACY AS % REL ERROR	2.62	-3.75	-5.77	8.77	4.31	-13.23	.46	11.39	-8.96	-8.06	-47.33	-48.18
OVERALL STD DEV (S)	9.24	10.85	5.53	11.54	11.77	6.62	7.54	9.48	7.72	6.61	6.17	8.54
OVERALL REL STD DEV, %	34.56	37.27	22.53	35.09	43.33	25.23	28.81	28.14	32.54	23.79	44.94	54.50
SINGLE ANALYST STD DEV, (SR)	5.74		6.41		6.87		3.19		5.12		3.52	
SINGLE ANALYST REL DEV, %	20.56		22.32		25.71		10.45		19.88		23.96	
HIGH YOUDEN PAIR	2	1	2	1	2	1	2	1	2	1	2	1
NUMBER OF DATA POINTS	14	14	16	16	17	16	17	17	15	15	15	13
TRUE VALUE UG/L	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84
MEAN RECOVERY	85.87	93.35	90.13	97.30	87.43	93.77	90.38	101.47	82.69	94.56	49.95	58.81
ACCURACY AS % REL ERROR	-5.81	-11.80	-1.07	-8.07	-4.10	-11.40	-.86	-4.13	-9.29	-10.66	-45.32	-44.44
OVERALL STD DEV (S)	14.60	16.72	14.61	16.18	23.27	22.15	23.13	21.87	12.48	17.16	15.98	21.10
OVERALL REL STD DEV, %	17.01	17.92	16.70	16.63	26.61	23.63	25.59	21.55	15.39	19.19	32.05	35.88
SINGLE ANALYST STD DEV, (SR)	8.57		7.73		8.45		6.98		7.73		11.22	
SINGLE ANALYST REL DEV, %	9.56		8.25		9.33		7.27		8.72		20.69	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 24.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

STATISTICAL SUMMARY FOR AROCLOR 1248 ANALYSES BY WATER TYPE

		WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR		6	2	6	2	6	2	6	2	6	2	6	2
NUMBER OF DATA POINTS		17	16	16	16	14	14	17	14	18	18	13	16
TRUE VALUE UG/L		16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00
MEAN RECOVERY		17.61	20.13	15.73	22.69	16.34	18.91	16.14	19.59	16.66	22.88	9.25	10.70
ACCURACY AS % REL ERROR		7.31	-8.52	-4.14	3.13	-.43	-14.06	-1.63	-10.97	1.52	4.02	-43.64	-51.36
OVERALL STD DEV (S)		4.14	3.74	6.63	10.40	2.90	3.98	5.20	3.24	7.88	9.34	5.14	5.87
OVERALL REL STD DEV, %		23.52	18.56	42.16	45.85	17.75	21.05	32.23	16.55	47.33	40.83	55.63	54.83
SINGLE ANALYST	STD DEV, (SR)	3.42		7.30		3.37		3.43		6.49		3.51	
	REL DEV, %	18.12		38.00		19.12		19.17		32.85		35.22	
MEDIUM YOUDEN PAIR		5	3	5	3	5	3	5	3	5	3	5	3
NUMBER OF DATA POINTS		17	18	16	15	16	14	17	16	18	18	14	16
TRUE VALUE UG/L		32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00
MEAN RECOVERY		34.52	45.16	33.98	39.91	32.51	38.56	30.96	44.63	31.60	38.74	19.46	19.22
ACCURACY AS % REL ERROR		5.19	2.64	3.56	-9.30	-.93	-12.36	-5.65	1.42	-3.69	-11.96	-43.13	-56.33
OVERALL STD DEV (S)		10.10	12.88	9.62	5.87	8.43	5.51	5.24	11.30	9.76	11.85	7.82	9.13
OVERALL REL STD DEV, %		29.27	29.52	28.31	14.70	25.93	14.28	16.92	25.32	30.88	30.60	41.91	47.52
SINGLE ANALYST	STD DEV, (SR)	8.84		6.78		5.87		8.22		7.64		5.13	
	REL DEV, %	22.19		18.36		16.53		21.76		21.72		27.10	
HIGH YOUDEN PAIR		4	1	4	1	4	1	4	1	4	1	4	1
NUMBER OF DATA POINTS		17	17	16	16	15	15	17	17	19	18	15	17
TRUE VALUE UG/L		114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00
MEAN RECOVERY		116.21	141.79	105.21	134.52	100.32	134.06	104.76	136.35	99.11	133.59	69.28	76.66
ACCURACY AS % REL ERROR		1.18	-7.93	-8.40	-12.65	-12.66	-12.95	-8.79	-11.46	-17.19	-13.25	-40.55	-50.22
OVERALL STD DEV (S)		30.51	24.03	40.89	21.98	21.25	29.46	24.16	21.35	25.95	34.65	33.35	38.71
OVERALL REL STD DEV, %		26.26	18.36	38.87	16.34	21.18	21.97	23.06	15.65	27.18	25.93	56.16	50.50
SINGLE ANALYST	STD DEV, (SR)	19.86		22.52		11.83		11.25		10.72		27.58	
	REL DEV, %	15.39		18.79		10.09		9.33		9.38		38.05	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 25.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SPI PESTICIDES,PCBS 5

STATISTICAL SUMMARY FOR AROCLOR 1254 ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
NUMBER OF DATA POINTS	18	18	14	16	18	17	16	17	15	16	14	15
TRUE VALUE UG/L	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60
MEAN RECOVERY	15.39	18.16	16.93	17.28	15.91	17.65	14.25	17.26	11.45	14.45	8.12	10.28
ACCURACY AS % REL ERROR	-11.52	-15.95	-3.22	-19.99	-8.51	-20.15	-18.05	-20.09	-34.18	-33.12	-53.31	-52.42
OVERALL STD DEV (S)	6.52	6.21	5.91	3.95	6.89	4.93	3.25	3.82	2.41	2.26	3.13	6.39
OVERALL REL STD DEV, %	42.40	34.18	35.10	22.88	43.29	28.60	22.81	22.14	21.08	15.63	39.53	62.20
SINGLE ANALYST STD DEV, (SR)	4.03		3.02		2.54		3.21		1.19		3.92	
SINGLE ANALYST REL DEV, %	24.04		17.72		15.32		20.35		9.16		42.58	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
NUMBER OF DATA POINTS	17	18	17	17	16	17	17	17	17	15	16	16
TRUE VALUE UG/L	52.18	64.80	52.18	64.80	52.18	64.80	52.18	64.80	52.18	64.80	52.18	64.80
MEAN RECOVERY	43.91	48.59	42.68	56.90	41.27	50.93	42.97	54.62	36.91	46.70	22.94	29.48
ACCURACY AS % REL ERROR	-15.84	-25.03	-18.21	-12.19	-20.91	-21.40	-17.65	-15.71	-29.25	-27.93	-56.04	-54.51
OVERALL STD DEV (S)	8.70	16.64	9.06	12.32	9.55	13.31	9.31	10.39	8.07	12.45	11.99	13.11
OVERALL REL STD DEV, %	19.82	34.24	21.24	21.65	23.14	26.13	21.68	19.03	21.88	26.69	52.29	44.49
SINGLE ANALYST STD DEV, (SR)	10.69		7.55		4.84		7.45		7.03		6.76	
SINGLE ANALYST REL DEV, %	23.13		15.16		10.49		15.27		16.81		25.78	
HIGH YOUDEN PAIR	2	1	2	1	2	1	2	1	2	1	2	1
NUMBER OF DATA POINTS	17	17	16	17	17	17	17	16	17	17	15	13
TRUE VALUE UG/L	86.96	108.00	86.96	108.00	86.96	108.00	86.96	108.00	86.96	108.00	86.96	108.00
MEAN RECOVERY	72.19	80.00	77.80	87.32	70.28	85.84	79.26	93.58	65.02	79.77	41.96	55.51
ACCURACY AS % REL ERROR	-16.98	-25.93	-10.53	-19.14	-19.18	-20.52	-8.85	-13.35	-25.24	-26.14	-51.75	-48.61
OVERALL STD DEV (S)	11.89	18.76	11.47	20.86	13.00	20.37	18.52	15.59	11.73	17.36	14.15	17.99
OVERALL REL STD DEV, %	16.46	23.45	14.74	23.89	18.50	23.73	23.36	16.66	18.04	21.77	33.72	32.41
SINGLE ANALYST STD DEV, (SR)	10.24		10.91		11.27		9.12		10.48		13.70	
SINGLE ANALYST REL DEV, %	13.46		13.22		14.43		10.55		14.48		28.11	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE 26.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 6

STATISTICAL SUMMARY FOR AROCLOR 1260 ANALYSES BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	4	3	4	3	4	3	4	3	4	3	4	3
NUMBER OF DATA POINTS	16	16	15	15	14	15	16	16	15	16	14	14
TRUE VALUE UG/L	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83
MEAN RECOVERY	33.03	27.57	37.09	32.19	38.29	34.52	39.28	30.58	31.41	28.03	21.31	20.89
ACCURACY AS % REL ERROR	-22.11	-25.14	-12.53	-12.61	-9.71	-6.28	-7.38	-16.99	-25.93	-23.91	-49.76	-43.29
OVERALL STD DEV (S)	8.30	4.89	8.81	8.98	8.01	10.45	12.70	9.94	7.38	7.20	12.37	7.98
OVERALL REL STD DEV, %	25.13	17.72	23.75	27.90	20.93	30.26	32.34	32.50	23.51	25.67	58.06	38.22
SINGLE STD DEV, (SR)	4.09		4.95		5.55		6.17		4.38		8.24	
ANALYST REL DEV, %	13.50		14.29		15.25		17.66		14.75		39.06	
MEDIUM YOUDEN PAIR	1	2	1	2	1	2	1	2	1	2	1	2
NUMBER OF DATA POINTS	16	15	15	15	15	15	16	16	16	16	14	13
TRUE VALUE UG/L	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50
MEAN RECOVERY	82.82	77.58	101.42	91.35	104.91	98.27	99.60	97.62	102.90	91.06	71.54	77.96
ACCURACY AS % REL ERROR	-34.90	-29.79	-20.28	-17.33	-17.54	-11.06	-21.72	-11.65	-19.12	-17.59	-43.77	-29.44
OVERALL STD DEV (S)	33.92	25.85	39.57	28.66	30.14	18.96	25.52	27.89	31.39	22.76	35.69	20.98
OVERALL REL STD DEV, %	40.96	34.61	39.03	31.38	28.73	19.29	25.62	28.57	30.51	24.99	49.88	26.91
SINGLE STD DEV, (SR)	17.63		17.69		16.24		13.92		14.39		18.18	
ANALYST REL DEV, %	21.98		18.35		15.99		14.12		14.84		24.32	
HIGH YOUDEN PAIR	6	5	6	5	6	5	6	5	6	5	6	5
NUMBER OF DATA POINTS	15	16	15	15	15	14	16	16	15	16	14	14
TRUE VALUE UG/L	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99
MEAN RECOVERY	184.63	145.42	200.31	175.40	214.07	196.47	205.38	173.24	190.63	177.86	134.69	105.45
ACCURACY AS % REL ERROR	-27.44	-34.20	-21.28	-20.63	-15.87	-11.10	-19.28	-21.61	-25.08	-19.52	-47.07	-52.28
OVERALL STD DEV (S)	49.05	53.12	61.50	50.05	58.75	60.89	51.41	48.26	75.70	50.61	61.81	58.67
OVERALL REL STD DEV, %	26.57	36.53	30.70	28.53	27.44	30.99	25.03	27.86	39.71	28.45	45.89	55.64
SINGLE STD DEV, (SR)	30.27		36.09		29.99		21.38		26.03		21.56	
ANALYST REL DEV, %	18.35		19.21		14.61		11.29		14.13		17.96	

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
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TABLE 27. ESTIMATED PERCENT RECOVERY FOR VARIOUS WATER TYPES AT MIDRANGE CONCENTRATION

Compound	Percent recovery in given water types						
	Midrange	Laboratory pure	Finished drinking	Surface	Industrial effluent 1	Industrial effluent 2	Industrial effluent 3
aldrin	3.2722	82	82	84	78	74	32
α-BHC	2.215	85	86	86	86	85	63
β-BHC	5.007	82	88	83	82	86	66
γ-BHC	1.908	79	78	81	83	79	61
δ-BHC	3.352	83	82	82	77	85	65
4,4'-DDD	12.38	86	88	89	96	85	59
4,4'-DDE	5.575	88	84	86	90	76	50
4,4'-DDT	12.92	92	91	94	92	76	50
dieldrin	6.81	90	88	85	88	89	55
endosulfan I	7.33	98	90	95	95	89	58
endosulfan II	8.135	97	89	86	101	90	68
endosulfan sulfate	16.78	89	87	87	91	81	60
endrin	12.375	89	89	85	87	89	55
heptachlor	1.833	71	78	76	68	62	27
heptachlor epoxide	3.746	92	85	87	86	89	54
chlordane	30.745	82	78	80	81	74	42
toxaphene	225	81	84	80	80	73	43
Aroclor 1016	49.25	82	86	82	83	77	52
Aroclor 1221	107.45	97	85	86	90	81	59
Aroclor 1232	104.9	101	93	101	95	93	57
Aroclor 1242	59.5	94	98	94	100	91	54
Aroclor 1248	85.2	98	92	88	92	86	52
Aroclor 1254	62.7	79	85	80	86	72	48
Aroclor 1260	145.4	69	81	86	81	79	56

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for heptachlor from industrial effluent 3, 27% at the midrange, with no apparent explanation available.

The multiple-compound pesticides, chlordane and toxaphene, had midrange recoveries ranging from 80 to 86% for the first four water types, 73 and 74% from industrial effluent 2, and 42 and 43% from industrial effluent 3. The midrange recoveries for the PCB formulations ranged from 69 to 101% across the first five matrices and from 48 to 59% from industrial effluent 3.

PRECISION OF THE METHOD

The precision of the method is estimated by calculating regression equations for the precision components versus the mean recovery. In each case, the overall standard deviation (S) and single-analyst standard deviation (SR) have been expressed in terms of relative standard deviations at the midrange concentration for illustration purposes. These are shown in Tables 28 and 29, respectively.

The overall relative standard deviations are reasonably consistent over the first five water types and higher in industrial effluent 3 for all three groupings of substances. The higher standard deviations in industrial effluent 3 result from the varying ability of the analysts to deal with the emulsion. The overall relative standard deviation at the midrange was from 16 to 45, 19 to 36, and 14 to 40% for single-compound pesticides, multiple-compound pesticides, and PCB formulations, respectively, for the first five matrices. In the third effluent, they ranged from 26 to 91, 43 to 44 and 36 to 55% for the three groups, respectively.

The single-analyst standard deviations were consistent with the overall results. For these, the ranges were 11 to 33, 10 to 31, and 12 to 28%, respectively, for the single-compound pesticides, multiple-compound pesticides and PCB formulations in the first five waters. In the sixth water, industrial effluent 3, the ranges were 13 to 58, 24 to 33, and 17 to 43%, respectively.

COMPARISON ACROSS WATER TYPES

The summaries of the effect of water type on the results obtained are presented in Tables B-1 through B-24. A significant F-statistic was obtained on all of the substances studied. Inspection of the contrasts of the waters versus the laboratory pure water revealed that the only significant effect was the difference in intercept, or recovery, between

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TABLE 28. ESTIMATED PERCENT RELATIVE STANDARD DEVIATION FOR VARIOUS WATER TYPES AT MIDRANGE CONCENTRATION

Compound	Overall RSD for given water types						
	Midrange	Laboratory pure	Finished drinking	Surface	Industrial effluent 1	Industrial effluent 2	Industrial effluent 3
aldrin	3.2722	20	21	19	23	28	64
α-BHC	2.215	23	21	21	30	19	32
β-BHC	5.007	32	27	26	24	27	26
γ-BHC	1.908	24	23	20	13	16	30
δ-BHC	3.352	26	31	32	34	26	34
4,4'-DDD	12.38	26	23	22	21	19	43
4,4'-DDE	5.575	26	21	21	21	23	47
4,4'-DDT	12.92	29	32	26	27	26	56
dieldrin	6.81	18	19	26	16	15	39
endosulfan I	7.33	19	16	25	12	19	47
endosulfan II	8.135	45	33	27	39	31	66
endosulfan sulfate	16.78	26	26	23	41	31	39
endrin	12.375	26	22	34	32	28	49
heptachlor	1.833	20	27	26	25	36	91
heptachlor epoxide	3.746	23	23	20	18	19	36
chlordane	30.745	19	28	19	36	25	43
toxaphene	225	20	21	24	22	24	44
Aroclor 1016	49.25	16	15	16	14	20	47
Aroclor 1221	107.45	34	36	40	28	37	55
Aroclor 1232	104.9	34	39	34	34	39	52
Aroclor 1242	59.5	24	22	29	25	20	36
Aroclor 1248	85.2	25	24	22	19	27	49
Aroclor 1254	62.7	23	20	22	20	22	40
Aroclor 1260	145.4	36	32	26	27	31	44

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TABLE 29. SINGLE-ANALYST PERCENT RELATIVE STANDARD DEVIATION FOR VARIOUS WATER TYPES AT MIDRANGE CONCENTRATION

Compound	Single-analyst RSD for given water types						
	Midrange	Laboratory pure	Finished drinking	Surface	Industrial effluent 1	Industrial effluent 2	Industrial effluent 3
aldrin	3.2722	15	13	14	16	22	37
α-BHC	2.215	15	12	19	25	15	14
β-BHC	5.007	22	13	17	17	18	13
γ-BHC	1.908	15	15	12	12	10	22
δ-BHC	3.352	21	17	19	21	18	24
4,4'-DDD	12.38	19	14	17	20	11	25
4,4'-DDE	5.575	14	14	13	22	21	27
4,4'-DDT	12.92	20	19	16	26	17	30
dieldrin	6.81	15	15	22	17	14	27
endosulfan I	7.33	11	13	16	12	12	20
endosulfan II	8.135	33	21	24	17	14	17
endosulfan sulfate	16.78	15	15	13	30	26	20
endrin	12.375	22	18	29	27	22	29
heptachlor	1.833	13	18	18	18	26	58
heptachlor epoxide	3.746	15	16	13	15	17	22
chlordane	30.745	13	18	12	31	15	33
toxaphene	225	10	12	20	14	18	24
Aroclor 1016	49.25	13	15	12	13	20	34
Aroclor 1221	107.45	28	28	26	16	26	43
Aroclor 1232	104.9	19	26	23	25	23	24
Aroclor 1242	59.5	13	13	15	8	12	17
Aroclor 1248	85.2	17	17	12	13	12	35
Aroclor 1254	62.7	18	14	13	13	15	25
Aroclor 1260	145.4	20	19	15	13	14	19

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the laboratory pure water and industrial effluent 3 for 15 of the 24 substances studied.

The conclusion from this evaluation is that the variability among analyses was equivalent across all water types studied and that the accuracy was equivalent in five of the six waters. It should be noted, however, that the industrial effluents were selected on the basis of a low background of interfering compounds and as such do not represent wastewaters in general.

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METHOD EVALUATION

The accuracy of the method as determined from the collaborative study data can be compared to the results obtained during the development study on methodology [10]. In the wastewater application phase of that program, data were obtained on five industrial effluents, three of which were similar in character to those used in this study, i.e., providing a low background of interfering compounds. These are identified as wastewaters 1, 3, and 4 in that report. For purposes of discussion, the study compounds can be classified into three groupings: single-compound pesticides, multiple-compound pesticides, and PCB formulations.

In the previous work, performed by a single laboratory, recoveries of the single-compound pesticides were generally near 100%, with ranges of 91 to 100, 79 to 102, and 82 to 101 for the three similar wastewaters. In this study, the recoveries were similar for industrial effluent 1 (68 to 101), slightly lower for industrial effluent 2 (62 to 90), and lower for industrial effluent 3 (27 to 68). The results for industrial effluent 3 were consistent with the preliminary evaluation of this matrix by this laboratory, however, in which recoveries were consistently obtained near the 60% level. Lower average recoveries were obtained on the multiple-compound pesticides, around 80% for industrial effluents 1 and 2 and 34 and 54% for industrial effluent 3 compared to recoveries at or above 90% in the previous study.

For the Aroclor formulations, the results were similar to the developmental work. In the previous study, the recovery of the Aroclors ranged from 92 to 104 and 92 to 103 in two of the wastewaters, and a recovery of 99% was obtained for Aroclor 1254 in the third, the only formulation tested in that matrix. While the range of values was wider (81 to 100 and 72 to 93) in industrial effluents 1 and 2, percent recoveries in the high 80s and low 90s were common. In industrial effluent 3, recoveries of 48 to 59% were obtained, which represented the levels expected from this effluent in normal performance of the method.

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In a previous study, method detection limit (MDL) was determined for 18 of the 24 substances in interference-free water (IFW) and for 15 of the 24 substances in two industrial effluents, using a procedure specified by the Environmental Monitoring and Support Laboratory. In this procedure, at least seven sample replicates containing the compounds at concentrations near the estimated detection limit of each were analyzed by Method 608. The standard deviation of the replicate measurements was calculated and multiplied by the Student's t value appropriate for a 99% confidence level with n-1 degrees of freedom (3.143 for seven replicates) to give the MDL value. The MDL values obtained are given in Table 30. Also shown in Table 30 for easy comparisons with the MDLs are the lowest concentrations used in the interlaboratory study. Due to circumstances which could not be controlled, it was necessary to choose the spiking concentrations (Youden pairs) used in the interlaboratory study before the MDL studies were completed. As a consequence, the spiking concentrations in industrial effluent 1 (the water with the highest background) were either lower or higher than would have been chosen, in some instances, if the MDL data had been available before concentrations were selected. For example, the spiking concentrations for γ-BHC and heptachlor are, respectively, only 1.7 and 1.3 times the MDL values, but the spiking concentration for endosulfan II is 252 times the MDL figure. In most instances, however, the ratio of spiking concentration to MDL value lies between 5 and 100, which is considered an acceptable range. In any event, the results obtained in the study are not adversely affected by the several extreme ratios noted above.

In conjunction with the MDL determinations, analytical curves for the single-compound pesticides, chlordane, toxaphene, and Aroclor 1242 were determined from duplicate sample analyses at five concentration levels chosen in conference with the project officer. Essentially linear responses were observed for all of the substances except β-BHC, endosulfan I, toxaphene, and Aroclor 1242. At concentrations within the ranges used in the interlaboratory study, the nonlinear responses of these four substances could significantly affect the results obtained unless the analyst constructed his calibration curves precisely or diluted the extracts, before analysis, to a point within the linear segment of the analytical curve. For these four substances, the response factor obtained at the low end of the concentration range could have diminished at the upper end by as much as 20% for β-BHC, 10% for endosulfan I, 20 to 25% for toxaphene, and 30 to 35% for Aroclor 1242. However, the recovery data for the three concentration levels studied show similar values, indicating that

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TABLE 30. METHOD DETECTION LIMITS AND LOWEST CONCENTRATIONS USED IN STUDY

Substance	MDL, µg/L			Lowest concentration µg/L
	Interference free water	Industrial effluent 1	Industrial effluent 2	
aldrin	0.004	0.055	0.005	0.944
α-BHC	0.003	0.184	0.013	0.470
β-BHC	0.006	0.059	0.011	0.864
γ-BHC	0.004	0.283	0.007	0.476
δ-BHC	0.009	0.062	0.023	0.944
4,4'-DDD	0.011	0.031	0.029	2.46
4,4'-DDE	0.004	0.038	0.008	1.31
4,4'-DDT	0.012	0.049	0.030	3.64
dieldrin	0.002	0.017	0.010	1.32
endosulfan I	0.014	0.061	0.056	1.26
endosulfan II	0.004	0.009	0.013	2.27
endosulfan sulfate	0.066	0.300	0.262	3.86
endrin	0.006	0.079	0.031	2.15
heptachlor	0.003	0.338	0.009	0.446
heptachlor epoxide	0.083	0.148	0.021	0.872
chlordane	0.014			8.5
toxaphene	0.235			47.0
Aroclor 1242	0.065			13.0
Aroclor 1016				10.2
Aroclor 1221				23.9
Aroclor 1232				24.8
Aroclor 1248				16.4
Aroclor 1254				17.4
Aroclor 1260				36.8

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problems associated with the nonlinearity of response of these substances were handled in an effective way by the participating analysts.

The most frequently mentioned trouble spot in the method involved the Kuderna-Danish apparatus. The temperatures given in the method were found to be too low to accomplish the concentration steps in the prescribed time, and most analysts who reported this problem had not given sufficient importance to the description in the method that the balls in the Snyder condenser would actively chatter at the proper boiling rate. Several participants lost samples rather consistently through "explosions" due to the sudden vaporization of a superheated portion of the extract. This occurred in some instances with enough violence to break the glass apparatus. An instruction is needed in the method as to where and how fast heat should be applied to the Kuderna-Danish apparatus.

Several participants found the phrase "when the apparent volume of the liquid reaches 1 mL" ambiguous. What was meant by this phrase was that the final volume should be the apparent volume of 1 mL, at bath temperature, in the concentrator collection tube plus the liquid and uncondensed vapor in the flask and condenser amounting to a final volume, at room temperature, of about 5 mL. To achieve a final volume of 1 mL at room temperature, as some did, probably caused excessive losses in the concentration step. Excessive losses may have occurred, also, when some analysts maintained the stated bath temperatures for several hours in order to achieve adequate concentration. In order to do this, they had to ignore the estimated elapsed times given in the method for satisfactory concentration.

The Florisil cleanup step proved troublesome to several analysts who reported that they could not recover the substances from the column as stated in Method 608, using the elution mixtures and volumes given. These problems could result from a variety of indiscretions: failure to use PR grade Florisil, failure to heat the Florisil as prescribed, failure to use the Florisil immediately after removal from the oven, failure to use a column of the proper dimensions, failure to use proper drip rate, failure to use ethyl ether containing 2% ethyl alcohol, and failure to guard against evaporative losses after the elution mixtures are prepared. Admittedly this is a step requiring much care; however, when due care is exercised, previous experience at this laboratory shows it to be very dependable and to give very reproducible results.

The use of the mercury to rid extracts of elemental sulfur [11] was reported to be ineffective by a few participants. Our experience is that

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erratic results are sometimes encountered with its use but that it is better for general use with the large number of compounds involved in this study than are the known alternatives: acid-washed copper strips [12] and tetrabutylammonium sulfite reagent [13].

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Other difficulties arose that could be problems associated with any interlaboratory study of any analytical method. Some particiants prepared standards inaccurately, performed calculations incorrectly, transposed digits, and at least two participants submitted data summary sheets for substances other than the ones given in the headings on the sheets.

Participants were invited to provide comments about Method 608. Many comments were releated to the trouble areas mentioned previously. Some of the comments pertaining to other aspects are interesting from their human as well as technical content. For example:

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1. The method is too labor intensive.
2. Better quality control should be specified.
3. It is a good state-of-the-art method.
4. Spiking concentrations were inappropriately high with respect to what would be expected in wastewaters.
5. The atmospheric pollution from all of the Kuderna-Danish evaporations across the country is unacceptable.
6. Should correct results by applying recovery factors.
7. Should incorporate internal standards which elute in the fractions taken from the Florisil column.
8. Should give more detailed instructions, especially on how to preserve standard solutions.
9. Recommend different solvents, different analytical column.
10. The method is complete, concise, lucid, and relatively simple to follow.

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TABLE A-1.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ALDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12	0.94	1.12
LABORATORY NUMBER												
801	0.75	1.12	0.77	1.20	0.73	1.10	0.80	1.34	0.63	0.90	0.40	1.01*
802	0.83	0.72	0.74	0.55	0.73	0.72	0.74	0.74	0.64	0.75	0.61	0.57
803	0.77	0.95	0.73	0.88	0.72	0.89	0.81	0.80	0.60	0.77	1.22*	0.55
804	*	0.71	0.26	1.00	0.67	0.92	0.55	0.85	0.49	0.70	*	0.18
805	0.78	0.12*	1.09	0.47	0.95	0.74	0.94	0.44	0.61	0.38	0.26	0.30
806	1.41*	1.50	1.33	1.05	1.28	1.55	1.19	2.67*	*	*	0.70	0.42
807	3.07*	3.99*	1.12*	1.39*	7.85*	1.68	1.13*	2.25*	1.66*	1.75*	0.09	19.00*
808	0.59	0.74	0.62	0.68	0.66*	0.71*	0.55*	0.51*	0.31*	0.13*	0.14	0.09
809	0.62	1.03	0.71	1.33	0.86	0.94	0.64	0.70	0.67	0.94	0.38	0.23
810	0.65	0.95	0.61	0.62	1.05	0.70	0.73	0.78	0.72	0.85	0.24	0.36
811	6.02*	7.44*	6.42*	6.96*	6.10*	7.25*	9.31*	7.34*	5.58*	8.77*	4.98*	6.85*
812	0.70	0.89	0.84	0.91	0.88	1.10	0.93	1.01	0.74	0.78	0.23	0.23
813	0.88	1.04	0.66	1.02	0.80	0.87	0.90	0.96	0.66	0.86	0.02	0.07
814	0.90	1.17	1.15	1.25	*	1.25	1.62*	1.78*	2.06*	0.82	*	*
816	0.28*	*	0.34*	0.67*	0.40	0.64	0.33	0.82	0.23	0.48	0.04	0.13
817	0.89	0.96	1.12	1.28	0.91	0.93	0.86	0.82	1.04	0.98	*	*
818	1.04	1.28	0.93	1.10	1.10	1.23	0.91	1.18	1.01	1.14	0.95*	0.94*
819	2.28*	1.97*	1.95*	1.70*	2.35*	1.71*	2.04*	1.54*	1.96*	1.63*	*	*
820	0.23*	0.29*	0.02*	0.24*	0.14*	0.22*	0.26*	0.33*	0.18*	0.23*	0.07*	0.06*
821	0.64	0.88	0.80	0.88	0.58	0.80	0.86	0.96	0.70	0.71	0.06	0.35

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
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TABLE A-1 (CONT'D).

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRT PESTICIDES,PCBS 2

RAW DATA FOR ALDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48	3.78	4.48
LABORATORY NUMBER												
801	3.12	3.79	2.99	3.68	3.05	3.37	2.83	3.73	2.53	2.92	2.26	2.38
802	3.12	2.55	1.59	2.12	2.74	2.45	2.71	2.33	2.71	2.55	2.21	1.67
803	3.00	3.20	3.20	3.48	2.84	3.64	2.81	3.53	2.72	3.22	2.60	2.00
804	2.36	2.76	3.17	3.71	2.96	3.68	3.08	3.50	2.18	2.77	0.90	0.72
805	2.24	5.90	1.50	2.56	3.90	3.70	1.98	2.70	4.40	3.13	1.50	0.89
806	5.87*	4.54	3.59	4.04	3.18	3.89	0.45*	0.53	*	1.08*	1.06	1.41
807	9.55*	10.10*	5.35*	5.65*	7.49*	7.20*	6.10*	6.31*	1.90	5.57	17.30*	19.00*
808	2.35	2.44	2.41	3.46	2.40*	2.60*	1.32*	2.49*	0.99*	1.35*	0.45	0.43
809	2.65	4.19	3.69	4.47	3.45	3.56	2.41	3.75	2.75	3.22	0.69	2.03
810	3.46	4.57	2.85	4.00	3.02	4.10	3.97	4.18	3.35	4.35	1.57	1.94
811	4.32*	11.20*	3.44*	10.40*	3.94*	11.20*	3.04*	10.20*	3.10*	8.42*	2.60*	9.36*
812	3.04	3.44	3.22	3.30	3.76	3.88	3.46	4.58	2.48	3.30	1.63	1.15
813	2.91	4.01	2.99	3.45	2.49	3.87	2.80	3.67	2.90	2.12	1.29	1.16
814	3.94	4.15	3.60	4.76	4.16	4.11	3.10	4.46	3.79	4.25	*	*
816	2.41*	1.44*	2.19*	1.03*	2.71	1.57*	2.73	1.87	2.39	1.41	0.61	0.33
817	3.02	4.26	3.01	4.10	2.58	4.41	2.70	3.39	*	3.41	*	0.10*
818	3.87	5.12	4.14	5.36	4.05	4.98	4.17	4.94	3.46	4.53	3.56*	3.87*
819	6.17*	8.87*	6.01*	7.23*	5.84*	9.11*	4.36*	8.45*	5.25*	6.93*	*	*
820	0.94*	0.92*	0.70*	0.70*	0.62*	0.83*	0.85*	0.95*	0.95*	0.84*	0.12*	0.20*
821	3.74	4.59	2.51	3.85	2.59	3.28	2.97	3.55	2.76	3.18	0.22	0.23

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-1 (CONT'D).

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ALDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60	4.72	5.60
LABORATORY NUMBER												
801	3.57	4.99	3.43	5.09	3.46	5.06	3.37	5.45	2.78	4.54	2.24	3.79
802	3.48	4.44	2.97	3.85	3.77	4.10	2.97	4.08	2.96	3.98	2.51	3.59
803	3.80	4.50	3.88	4.75	3.75	4.70	6.95*	4.60	3.35	2.75	3.55	4.20
804	3.55	3.19	2.81	4.86	3.49	4.02	3.43	3.92	2.43	3.16	2.75	1.92
805	2.65	3.60	3.27	5.56	3.69	5.80	2.92	5.30	2.57	3.40	1.78	4.50
806	4.53	5.25	4.83	5.11	5.61	4.87	3.09	2.58	*	*	1.46	1.09
807	9.02*	8.73*	4.93*	4.84*	1.57	8.46*	5.75*	8.31*	6.81	5.11	0.66	14.30*
808	2.61	3.73	2.34	2.21*	2.86*	3.11*	2.83*	1.25*	0.63*	1.20*	0.64	0.62
809	3.32	2.77	4.05	3.17	3.91	3.42	4.09	2.73	3.43	2.61	2.34	0.82
810	4.51	5.33	4.43	4.90	3.80	6.30	4.75	4.75	3.48	4.39	1.77	1.66
811	10.50*	21.00*	10.60*	21.10*	10.40*	20.80*	11.00*	19.70*	12.70*	17.40*	9.87*	15.00*
812	3.82	4.19	3.46	4.66	4.08	4.74	4.14	5.24	3.20	3.40	1.95	1.06
813	3.20	3.73	3.13	3.85	3.36	4.59	3.00	4.62	2.87	3.81	0.56	1.28
814	4.29	5.16	4.45	4.97	5.22	5.69	5.09	5.27	4.99	4.95	*	*
816	2.56*	4.29*	2.74*	3.66*	2.86	4.22	3.01	4.07	1.50	3.05	0.18	0.39
817	4.14	4.72	3.96	4.98	4.40	4.49	3.75	4.78	3.90	4.67	*	3.94*
818	5.14	5.25	5.03	4.63	4.84	4.73	4.58	4.08	5.10	5.08	3.81*	4.52*
819	8.85*	12.19*	7.91*	13.08*	8.68*	11.43*	9.95*	11.25*	9.04*	10.84*	*	*
820	1.02*	1.27*	0.62*	0.82*	0.82*	0.67*	1.05*	1.26*	1.05*	1.22*	0.20*	0.24*
821	3.97	5.32	5.55	4.31	3.57	4.10	3.37	4.20	3.56	4.05	0.41	0.29

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-2.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 1

RAW DATA FOR ALPHA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57	0.47	0.57
LABORATORY NUMBER												
801	0.42	0.52	0.44	0.60	0.41	0.56	0.54	0.83	0.32	0.65	0.15	0.42
802	0.59	0.48	0.50	0.50	0.51	0.49	0.32	0.43	0.49	0.50	0.40	*
803	0.17*	0.12*	0.20*	0.22*	0.17*	0.21*	*	0.11*	0.18*	0.20*	0.16*	0.20*
804	0.59	0.30	0.26*	0.34*	0.25*	0.19*	0.51	0.48	0.12*	0.17*	0.14	0.32
805	0.23*	0.22*	0.28	0.72	0.29*	0.27*	0.42	0.18	0.23*	0.12*	0.10*	0.05*
806	0.46	0.58	0.49	0.69	0.81	0.64	0.48	1.04	0.39	0.50	0.56	0.39
807	1.19*	1.03*	0.38	1.23*	1.13*	2.36*	3.25*	0.50	2.40*	2.18*	0.75*	2.01*
808	0.14*	0.19*	0.20*	0.19*	0.19*	0.20*	0.28*	0.27*	0.15*	0.24*	0.12	0.43
809	0.42	0.43	0.55	0.42	0.47	0.47	0.38	0.36	0.43	0.47	0.23	0.29
810	0.43	0.46	0.46	0.47	0.52	0.54	0.22	0.42	0.32	0.76	0.26	0.13
811	6.02*	4.73*	4.40*	4.99*	5.17*	4.88*	5.19*	4.95*	4.94*	4.56*	4.70*	3.97*
812	0.33	0.39	0.43	0.57	0.36	0.35	0.69	0.72	0.52	0.69	0.56	0.41
813	0.40	0.48	0.37	0.47	0.40	0.46	0.62	0.56	0.43	0.43	0.32	0.34
814	0.41	0.45	0.33	0.42	0.40	0.40	0.89	1.01	0.37	0.43	*	*
816	0.52	0.20	0.42	0.46	0.44	0.41	0.65	0.54	0.27	0.40	0.31	0.33
817	0.54	0.66	0.43	0.76	0.51	0.79*	0.76	0.76	0.54	0.73	0.48	1.00*
818	0.36	0.48	0.35	0.45	0.34	0.48	0.42	0.55	0.35	0.47	0.30	0.44
819	0.51	0.95*	0.52	0.87	0.38	1.25*	0.43	0.86	0.35	0.74	*	*
820	0.40	4.96*	0.46	0.55	0.74	0.52	0.72	0.97	0.44	0.55	0.27	0.26
821	0.52	0.69	0.42	0.46	0.43	0.55	0.49	0.50	0.38	0.60	0.29	0.25

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-2. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 1

RAW DATA FOR ALPHA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27	1.88	2.27
LABORATORY NUMBER												
801	1.86	2.25	1.97	1.99	1.81	1.85	2.64	2.10	1.40	2.03	1.60	2.27
802	1.60	1.71	1.84	1.49	1.77	1.47	1.45	1.40	1.74	1.84	1.55	1.49
803	0.67*	0.80*	0.72*	0.79*	0.70*	0.82*	0.85*	0.74*	0.60*	0.82*	0.58*	0.74*
804	0.27*	1.12	1.13*	1.21*	0.68*	1.33*	0.73	1.38	0.53*	1.44*	0.80	1.05
805	0.59*	1.10*	0.46	1.10	0.61*	0.63*	0.39	1.70	0.88*	0.79*	0.73*	0.85*
806	2.07	2.92	2.42	2.14	1.96	2.48	2.48	1.93	1.93	*	1.34	1.91
807	4.14*	3.45*	5.44*	5.78*	4.80*	5.60*	2.56	8.18*	3.42*	5.00*	4.36*	2.25*
808	0.56*	0.78*	0.60*	1.01*	0.62*	0.81*	0.88*	0.72*	0.44*	0.68*	0.46	1.09
809	1.27	1.79	1.26	2.02	1.44	1.98	1.24	1.77	1.05	1.99	0.88	1.66
810	1.61	2.04	1.72	2.38	1.44	2.25	0.78	1.42	1.63	1.61	1.02	0.83
811	10.00*	10.20*	10.00*	9.30*	9.64*	10.00*	9.67*	8.42*	9.80*	9.22*	6.98*	8.20*
812	1.46	2.14	1.36	2.03	1.89	2.36	1.66	2.67	1.70	2.29	1.15	1.48
813	1.11	1.24	1.18	1.32	1.13	1.31	1.24	1.29	1.10	1.27	0.82	1.09
814	1.40	1.63	1.48	1.81	0.96	1.66	1.94	2.14	1.53	1.64	*	*
816	1.51	1.71	1.27	1.57	1.57	1.40	0.55	2.04	1.27	1.80	1.07	1.84
817	1.90	3.80*	1.87	3.85*	1.83	4.01*	1.85	*	1.72	4.30*	2.17	2.21
818	1.29	1.68	1.33	1.59	1.30	1.68	1.31	1.55	1.18	1.61	1.16	1.64
819	2.11	1.54	1.63	1.86	1.91	2.99	1.72	3.37*	2.00	2.96*	*	*
820	*	1.99	1.87	2.12	1.53	1.88	1.26	1.51	1.63	1.88	0.96	1.43
821	1.57	2.04	1.92	2.20	1.18	1.31	2.18	2.18	1.78	1.90	0.81	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-2. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR ALPHA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97	3.29	3.97
LABORATORY NUMBER												
801	3.02	3.67	2.90	*	3.00	*	3.37	3.83	2.39	2.91	2.05	2.61
802	2.36	3.70	2.44	4.07	2.72	3.92	1.86	3.48	2.67	4.18	2.99	3.08
803	1.25*	1.45*	1.35*	1.65*	1.28*	1.53*	*	1.49*	1.18*	1.38*	1.11*	1.30*
804	0.57*	1.76	1.45*	1.47*	1.45*	1.40*	1.96	2.62	0.55*	0.87*	1.11	0.86
805	1.38*	1.20*	2.00	0.94*	0.98*	1.30*	2.00	0.92	0.94*	1.70*	0.60*	1.10*
806	3.07	3.07	2.63	3.28	2.90	3.38	2.95	3.54	3.51	4.03	3.07	3.52
807	5.02*	5.28*	6.90*	7.28*	6.04*	6.90*	9.73*	4.44	5.79*	7.70*	6.54*	7.04*
808	1.33*	1.54*	1.18*	1.66*	1.34*	1.26*	1.44*	1.50*	1.01*	1.52*	1.45	1.06
809	2.14	3.33	2.43	3.15	2.50	3.70	2.31	4.71	2.12	3.18	1.67	2.36
810	2.97	4.27	2.88	3.25	3.10	3.35	2.43	2.73	2.62	3.00	1.76	2.74
811	11.40*	13.70*	12.10*	12.50*	11.80*	12.00*	10.40*	10.40*	10.80*	9.69*	9.82*	9.80*
812	3.01	4.18	2.57	3.84	3.27	3.65	4.30	3.82	3.37	4.23	2.73	2.79
813	3.35	5.14	3.67	4.97	3.24	4.93	3.38	5.20	2.97	5.34	2.45	3.05
814	2.47	3.41	2.38	3.03	2.48	2.83	19.60*	3.42	2.57	3.25	*	*
816	1.76	3.53	2.78	3.28	2.62	3.42	2.79	3.30	2.25	2.74	1.86	2.49
817	3.48	2.90	1.92*	*	3.49	2.91	3.78	2.97	3.91	3.11	3.17	2.99
818	2.41	2.46	2.32	2.39	2.45	2.21	2.46	2.42	2.39	2.33	1.95	2.44
819	3.75	5.47	3.47	4.38	3.78	3.36	2.55	3.57	3.15	4.73	*	*
820	2.58	4.25	3.20	3.70	3.57	1.52	2.91	5.40	2.74	3.03	2.05	1.32
821	2.82	3.63	3.02	3.62	3.05	3.66	2.99	3.96	2.53	3.73	1.83	2.12

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER
6 - WASTE WATER 3

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TABLE A-3.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR BETA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86	1.14	0.86
LABORATORY NUMBER												
801	1.13	0.88	1.15	1.02	1.04	0.93	1.29	1.16	0.85	1.36	0.38	0.66
802	0.93	0.75	0.80	0.83	0.79	0.74	0.83	0.73	0.77	0.78	0.79	*
803	1.74*	1.41*	2.02*	1.60*	1.80*	1.50*	*	1.27*	1.88*	1.20*	1.80*	1.32*
804	2.12*	0.59	0.81	0.76	0.79*	0.36*	0.92	0.59	0.36*	0.35*	0.52	0.64
805	0.75	0.47	0.87	1.80	0.91	0.58	0.79*	0.26*	0.92	0.34	0.31*	0.13*
806	0.47*	0.34*	0.46*	0.55*	0.43*	0.54*	0.47*	0.62*	0.38*	0.32*	0.33*	0.70*
807	1.39	0.92	0.79	1.72	1.25	1.10	5.16*	1.00*	0.89	0.54	2.50*	2.01*
808	0.61	0.50	0.61*	0.57*	0.53*	0.40*	1.03	1.05	0.43*	0.45*	0.64	1.30*
809	1.01	0.64	1.19	0.65	1.16	0.73	1.17	0.77	1.04	0.70	0.75	0.49
810	1.36	0.97	1.54*	0.99	1.46	1.15	0.91	0.84	1.07	0.75	0.86	0.31
811	12.50*	8.44*	10.00*	8.23*	11.30*	8.60*	9.41*	7.62*	11.00*	7.62*	8.90*	6.84*
812	0.82	0.60	0.99	0.81	0.90	0.64	1.05	0.91	1.20	0.94	1.15	0.66
813	0.97	0.66	0.92	0.66	0.99	0.60	1.03	0.56	0.91	0.41	0.76	0.45
814	1.30	0.98	1.03	0.88	1.22	0.90	1.08	0.99	1.08	0.84	*	*
816	1.28	0.30	1.01	0.72	1.09	0.70	1.13	0.82	0.63	0.77	0.84	0.75
817	1.07	0.94	0.92	0.85	1.00	0.80	1.04	0.89	1.03	0.79	0.77	0.74
818	0.61	0.79	0.58*	0.72*	0.61	0.70	0.60	0.73	0.58	0.77	0.52	0.66
819	1.44	0.85	1.18	1.39	1.24*	1.85*	0.88	1.25	1.17	1.44	*	*
820	0.88	0.63	1.09	0.85	1.67	0.82	0.75	0.82	1.05	0.86	0.62	0.52
821	1.43	1.14	1.09	0.80	1.07	0.88	1.32	0.95	1.12	1.03	0.85	0.50

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-3. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR BETA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59	3.43	2.59
LABORATORY NUMBER												
801	3.61	2.90	3.84	2.36	4.06	2.17	3.71	2.71	2.60	2.48	10.50*	2.88
802	2.39	2.14	2.82	2.82	2.73	1.82	2.65	1.69	2.69	2.61	2.42	2.11
803	5.51*	4.14*	5.80*	4.40*	5.68*	4.20*	5.53*	4.17*	5.22*	4.58*	4.86*	3.60*
804	0.70	1.94	2.86	2.00	1.57*	1.94*	2.00	1.73	1.30*	2.24*	2.03	1.72
805	1.60	1.60	1.40	1.60	1.70	1.30	0.94*	1.90*	2.20	1.10*	1.70*	1.70*
806	1.52*	1.87*	1.27*	0.94*	1.18*	0.97*	2.16*	1.02*	1.24*	1.01*	1.11*	0.72*
807	3.45	2.50	3.79	4.06	3.45	2.93	4.03*	8.08*	2.60	1.96	5.92*	2.65*
808	1.72	1.55	1.52*	1.15*	1.27*	1.39*	2.53	1.53	1.46*	1.13*	1.37	1.59
809	2.17	2.16	2.12	2.53	2.39	2.45	2.18	2.35	1.78	2.39	1.57	2.12
810	3.72	2.88	4.00	3.28	3.46	3.10	2.08	2.21	3.82	2.30	2.44	1.67
811	24.90*	21.50*	22.70*	18.30*	23.40*	20.20*	21.40*	19.20*	22.70*	20.70*	18.20*	18.40*
812	2.89	2.53	2.61	2.17	3.32	2.68	2.86	2.46	3.16	3.05	2.72	1.76
813	2.69	1.98	3.00	2.15	2.61	2.22	2.91	2.21	2.59	2.11	2.31	1.75
814	3.09	2.37	3.14	2.44	2.18	2.39	3.20	2.55	3.20	2.24	*	*
816	2.82	2.01	2.26	1.89	2.96	1.62	0.92	2.52	2.40	2.38	2.33	2.08
817	2.26	2.93	2.32	2.76	2.17	3.00	2.19	*	2.19	2.54	2.62	2.50
818	1.29	2.06	1.35*	1.87*	1.34	1.57	1.34	1.73	1.22	1.80	1.22	1.75
819	4.53	2.64	4.17	2.93	4.57*	4.09*	3.42	2.66	4.90	4.10*	*	*
820	*	1.84	3.34	2.25	3.06	2.18	2.68	2.14	3.05	2.52	1.75	1.46
821	3.43	2.86	4.13	3.06	2.65	1.96	3.89	3.06	4.73	2.75	1.96	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-3. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I N V S I PAGE 60

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR BETA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91	9.15	6.91
LABORATORY NUMBER												
801	10.30	6.20	9.45	*	9.95	*	10.30	6.50	7.84	5.03	5.46	4.63
802	5.95	6.45	6.10	6.15	6.91	5.94	6.15	5.64	7.36	6.08	5.37	4.33
803	15.80*	11.30*	16.30*	12.80*	15.50*	11.60*	*	11.60*	15.40*	11.50*	13.90*	10.50*
804	1.89	3.85	5.60	3.17	4.79*	2.90*	6.21	5.13	1.95*	1.95*	4.03	1.95
805	6.50	3.00	7.30	2.40	4.10	3.20	6.80*	2.30*	3.60	4.10	2.80*	3.50*
806	3.66*	2.61*	3.01*	2.77*	3.32*	2.56*	3.74*	2.81*	3.84*	2.75*	2.82*	2.31*
807	7.09	5.72	10.20	8.65	6.88	6.55	16.70*	6.83*	7.94	8.75	11.50*	11.00*
808	5.75	3.94	5.41*	4.43*	5.86*	3.10*	7.13	3.98	3.70*	3.26*	6.00	3.20
809	5.23	4.46	5.78	4.36	6.01	4.66	5.74	4.51	5.00	3.77	4.88	3.58
810	9.72	8.61	9.22	6.76	10.50	6.82	7.74	5.64	8.67	6.28	6.44	5.98
811	34.00*	34.00*	32.20*	30.10*	33.60*	29.80*	30.10*	25.40*	31.30*	23.20*	32.00*	22.40*
812	8.75	6.52	7.74	5.65	8.63	6.52	12.20	6.73	9.45	6.66	8.11	6.45
813	9.63	10.20	10.80	9.22	9.55	8.61	9.40	8.35	8.36	10.30	7.97	6.52
814	7.62	6.68	7.48	6.33	7.76	5.75	49.10*	6.03	7.63	6.52	*	*
816	5.39	6.62	7.69	6.04	7.24	6.20	7.50	5.89	7.45	4.85	5.46	5.18
817	9.26	6.35	4.90*	*	9.80	5.56	8.83	5.36	10.33	5.76	8.77	5.69
818	5.10	3.98	4.93*	3.57*	5.50	3.64	5.34	4.67	5.21	3.29	4.37	3.99
819	10.60	8.11	10.10	6.66	11.50*	8.45*	7.07	5.74	9.28	6.83	*	*
820	2.06	4.98	7.60	4.06	8.43	3.18	7.27	4.73	7.03	5.04	5.94	2.65
821	8.32	7.04	9.17	7.29	9.10	5.92	9.56	7.36	9.65	9.27	5.87	4.32

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-4.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR GAMMA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	0.48	0.56	0.48	0.56	0.48	0.56	0.48	0.56	0.48	0.56	0.48	0.56
LABORATORY NUMBER												
801	0.24	0.49	0.27	0.54	0.30	0.55	0.35	0.66	0.34	0.46	0.29	0.54
802	0.37	0.39	0.36	0.11	0.33	0.39	0.35	0.37	0.29	0.40	0.30	0.36
803	0.36	0.46	0.35	0.45	0.34	0.40	0.58	0.33	0.25	0.40	0.54	0.29
804	*	0.30	0.08	0.41	0.05	0.67	0.21	0.39	0.26	0.23	*	0.22
805	0.33	0.07	0.32	0.22	0.70	0.21	0.36	0.24	0.33	0.21	0.15	0.25
806	0.49	0.60	0.53	0.44	0.45	0.56	0.69	2.82*	*	*	0.37	0.21
807	3.77*	2.73*	0.69*	0.84*	7.93*	1.43*	1.25*	1.83*	0.41*	1.75*	0.74*	0.55*
808	0.19*	0.31*	0.24*	0.25*	0.18*	0.20*	0.18*	0.24*	0.13*	0.23*	0.10*	0.17*
809	0.18	0.55	0.20	0.49	0.19	0.56	0.18	0.53	0.19	0.59	0.19	0.36
810	0.26	0.34	0.29	0.28	0.33	0.26	0.35	0.64	0.27	0.39	0.14	0.26
811	2.17*	2.50*	2.58*	1.94*	2.25*	2.29*	1.89*	1.52*	1.67*	1.99*	1.54*	1.40*
812	0.29	0.39	0.32	0.44	0.47	0.47	0.33	0.50	0.53	0.51	0.30	0.40
813	0.33	0.54	0.30	0.53	0.38	0.44	0.14	0.61	*	0.47	0.19	0.49
814	0.52	0.53	0.50	0.57	*	0.56	0.82	0.81	0.80*	0.36	*	*
816	0.15	*	0.20	0.48	0.19	0.36	0.15	0.47	0.16	0.42	0.10	0.33
817	0.29	0.42	0.42	0.70	0.38	0.41	0.44	0.42	0.31	0.48	0.22	0.42
818	0.42	0.56	0.41	0.55	0.45	0.53	0.42	0.52	0.40	0.56	0.39	0.46
819	0.80*	0.75*	0.70*	0.72*	0.58*	0.58*	0.63	0.66	0.85*	0.81*	*	*
820	0.95*	0.12	0.72	0.14	0.04*	0.12*	0.12*	0.14*	0.09*	0.11*	0.09*	0.08*
821	0.37	0.44	0.39	0.44	0.35	0.43	0.42	0.48	0.34	0.45	0.23	0.19

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR GAMMA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67	1.43	1.67
LABORATORY NUMBER												
801	1.09	1.35	1.04	1.31	1.11	1.25	1.16	1.39	1.00	1.12	0.96	1.15
802	1.43	1.09	1.20	0.87	1.27	1.12	1.18	0.96	1.24	1.14	1.37	1.14
803	1.02	1.04	0.74	1.36	1.04	1.30	0.95	1.20	1.04	1.36	1.00	0.90
804	0.82	0.94	1.12	1.26	0.79	0.93	1.19	1.35	0.88	1.02	0.72	0.82
805	1.16	2.60	0.77	1.15	1.39	1.20	1.14	1.15	2.24*	1.28	0.80	0.74
806	1.27	1.67	1.15	1.33	1.02	0.68	3.11*	1.82	*	*	0.48	0.89
807	7.26*	6.13*	3.06*	2.81*	5.16*	4.32*	3.69*	4.13*	2.50*	3.96*	1.77*	2.00*
808	0.81*	0.69*	0.80*	0.85*	0.83*	0.75*	0.39*	0.77*	0.35*	0.54*	0.29*	0.53*
809	1.24	1.75	1.73	1.84	1.44	1.73	1.37	1.79	1.42	1.49	0.63	1.34
810	1.03	1.35	1.02	1.26	0.94	1.30	1.25	1.29	1.12	1.49	0.72	1.09
811	*	3.00*	*	3.50*	*	2.84*	*	2.29*	*	2.18*	*	1.94*
812	1.10	1.33	1.10	1.30	1.32	1.37	1.16	1.57	1.17	1.45	1.03	1.24
813	0.91	1.33	1.00	1.36	0.91	1.26	1.22	1.24	0.98	0.75	0.65	1.28
814	1.36	1.66	1.36	1.89	1.70	1.70	1.32	1.78	1.53	1.74	*	*
816	1.15	0.90	0.99	0.65	1.18	0.70	1.22	0.91	1.02	1.08	0.61	0.54
817	1.14	1.39	1.05	1.35	1.01	1.48	1.17	1.28	*	1.07	1.10	0.93
818	1.32	1.71	1.40	1.71	1.52	1.72	1.40	1.65	1.34	1.67	1.26	1.71
819	1.72*	2.65*	1.18*	2.82*	1.53*	2.25*	1.22	2.68*	1.43*	2.51*	*	*
820	0.37*	0.36	0.32	0.39	0.26*	0.36*	0.30*	0.35*	0.31*	0.28*	0.18*	0.22*
821	1.14	1.28	1.09	1.49	1.27	1.42	1.25	1.37	1.21	1.39	0.75	0.77

* = REJECTED

WATER LEGEND
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2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR GAMMA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	2.86	3.34	2.86	3.34	2.86	3.34	2.86	3.34	2.86	3.34	2.86	3.34
LABORATORY NUMBER												
801	1.97	2.61	1.86	2.71	2.04	2.78	1.90	3.04	1.81	2.78	1.58	2.65
802	2.40	3.10	2.04	2.66	2.64	2.85	1.97	2.77	2.86	2.93	2.23	2.97
803	2.10	2.45	2.35	2.96	2.15	2.65	4.19*	2.58	2.25	2.50	2.25	2.75
804	1.81	1.77	1.51	2.74	1.65	2.16	2.60	2.71	1.96	2.46	1.89	1.76
805	1.94	2.20	2.00	2.65	2.48	2.90	2.11	2.69	1.94	1.75*	1.72	3.40
806	3.16	3.38	2.91	2.71	3.55	2.87	2.22	2.39	*	*	1.05	0.79
807	5.91*	4.83*	4.30*	6.34*	1.60	8.37*	4.90*	5.98*	6.63*	7.81*	3.10*	3.62*
808	1.42*	1.64*	1.16*	1.79*	1.46*	1.74*	1.34*	1.26*	0.38*	1.21*	0.98*	1.29*
809	2.59	3.15	2.52	3.06	2.57	3.20	2.48	2.70	2.57	2.74	2.28	1.71
810	2.45	2.88	2.47	2.81	2.21	3.47	2.76	2.72	2.01	2.73	1.20	1.35
811	3.25*	9.59*	2.95*	9.62*	3.01*	9.04*	2.92*	8.72*	4.37*	9.04*	2.75*	7.93*
812	2.54	2.86	2.72	3.62*	2.10	2.84	2.02	3.14	2.50	2.70	1.85	2.42
813	1.95	2.27	1.98	3.10	2.17	2.72	2.05	2.78	2.15	2.27	1.08	1.68
814	2.00	3.16	2.39	2.77	2.88	3.54	3.11	3.22	2.89	3.10	*	*
816	1.60	2.82	1.64	2.67	1.76	2.49	1.92	2.67	1.33	2.59	1.02	2.00
817	1.30	2.31	1.30	2.87	1.56	2.30	1.23	2.68	*	2.74	*	1.89
818	2.57	3.13	2.49	3.24	2.53	2.86	2.45	2.96	2.66	3.13	2.47	3.24
819	5.00*	6.06*	4.88*	6.67*	5.27*	7.02*	4.96*	5.64*	4.65*	5.85*	*	*
820	0.61	0.84*	0.38	0.61*	0.49*	0.43*	0.65*	0.68*	0.62*	0.66*	0.28*	0.50*
821	2.89	3.41	3.60	2.79	2.47	2.79	2.42	2.66	2.32	2.88	1.63	1.52

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-5.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR DELTA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	5	2	6
TRUE VALUE UG/L	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15	0.94	1.15
LABORATORY NUMBER												
801	0.89	1.12	0.88	1.32	0.74	1.16	1.06	1.37	0.59	1.45	0.31	0.78
802	0.73	0.91	0.62	0.95	0.65	0.98	0.63	0.96	0.61	0.96	0.54	*
803	0.86	1.10	0.85	1.10	0.79	1.00	*	0.95	0.82	1.00	0.73	0.85
804	1.12	0.69	0.61	0.81	0.53*	0.45*	0.68	0.76	0.29*	0.47*	0.39	0.51
805	0.50*	0.57*	0.68	2.40*	0.68	0.74	0.78	0.55	0.51	0.13	0.16	0.30
806	0.83	1.28	0.99	1.06	0.93	1.18	0.83	0.76	0.79	1.14	0.59	1.14
807	0.93	1.21	0.53	1.23	0.93	1.93	2.46*	0.81	2.12*	1.82*	1.55*	3.92*
808	0.36*	0.66*	0.29*	0.80*	0.14	0.88	0.47	0.50	0.38*	0.49*	0.17*	0.53*
809	0.92	0.94	1.15	0.88	0.98	0.92	0.96	0.93	0.78	1.01	0.35	0.54
810	0.37	1.14	1.54*	2.94*	2.18*	3.23*	1.23*	1.99*	1.63*	2.00*	1.48*	0.82*
811	17.20*	17.30*	12.30*	16.20*	12.40*	16.70*	12.70*	13.40*	15.30*	14.00*	12.40*	11.90*
812	0.60	0.70	0.80	0.50	0.66	0.82	0.71	0.46	0.98	1.12	0.93	0.66
813	0.62	0.84	0.62	0.82	0.68	0.67	0.68	0.83	0.66	0.79	0.50	0.70
814	0.77	0.98	0.65	0.91	0.75	0.91	0.63	1.16	0.69	0.97	*	*
816	1.26	0.42	0.97	0.66	1.02	0.66	1.04	1.09	0.30*	0.54*	0.23	1.13
817	0.79	1.13	0.62	1.06	0.71	0.82	0.71	0.99	0.77	0.99	0.63	1.07
818	1.28	1.64	1.22	1.69	1.22	1.79	1.16	1.69	1.11	1.69	1.09	1.46
819	0.65	0.73	0.58	1.08	0.51	1.35	0.40	1.31	0.51	1.48	*	*
820	0.61*	0.66*	0.64	0.86	0.24	0.83	0.26*	0.39*	0.56	0.71	0.29*	0.42*
821	0.99	1.22	0.84	0.89	0.87	1.02	1.03	0.97	0.94	1.36	0.49	0.53

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-5. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR DELTA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61	3.78	4.61
LABORATORY NUMBER												
801	3.69	4.59	4.24	4.09	3.63	4.16	4.12	4.49	2.50	4.62	1.19	4.87
802	2.32	3.53	2.81	3.83	2.63	3.13	2.60	2.90	2.65	4.41	2.49	3.35
803	3.00	4.45	3.44	3.80	3.09	3.96	2.93	4.31	3.08	4.16	3.31	3.91
804	0.64*	3.09	2.71	3.19	1.43*	3.04*	2.33	2.82	1.28*	3.41*	1.94	2.68
805	2.00*	2.40*	1.90	2.40	1.60	1.60	1.30	3.70	2.90	2.60	2.10	1.90
806	3.52	4.51	3.21	4.17	3.24	4.51	0.21	4.34	2.87	4.43	2.00	2.50
807	4.41	4.17	2.79	6.19	5.19	6.36	2.55	11.70*	4.07*	4.85*	8.53*	2.57
808	1.50*	2.52*	1.50*	2.97*	1.27	2.27	2.17	1.79	1.57*	2.14*	1.09*	0.84*
809	2.61	3.79	2.76	4.33	3.12	4.35	2.87	4.14	2.02	3.92	1.71	3.46
810	2.76	4.05	10.00*	13.20*	7.86*	10.50*	3.89*	8.20*	8.56*	7.42*	6.00*	6.01*
811	34.80*	29.10*	31.30*	27.20*	30.80*	28.40*	31.40*	26.30*	33.30*	28.40*	27.40*	24.90*
812	2.47	3.86	1.55	2.46	3.41	3.74	1.87	4.64	3.23	4.89	1.86	2.85
813	2.25	3.12	2.65	3.54	2.30	3.59	2.40	3.46	2.22	3.63	2.17	2.52
814	2.99	3.47	3.44	3.89	1.79	3.55	3.20	4.34	3.43	3.72	*	*
816	2.62	2.10	2.32	1.71	2.45	0.35	0.74	1.21	2.09*	3.16*	2.37	1.26
817	3.12	5.15	3.02	4.82	3.14	4.05	3.06	*	3.23	4.85	3.60	3.17
818	3.75	4.69	3.86	4.40	3.95	4.24	3.44	4.10	3.44	4.51	3.31	3.67
819	2.82	2.10	2.32	2.46	2.62	4.91	2.61	3.91	3.49	3.84	*	*
820	*	1.60*	2.96	2.44	2.41	3.70	1.12*	1.60*	2.14	2.64	0.99*	1.77*
821	2.94	4.20	3.34	4.16	2.20	2.46	3.24	5.03	4.05	3.07	1.58	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
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4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-5. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR DELTA-BHC ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76	4.72	5.76
LABORATORY NUMBER												
801	4.22	5.09	4.13	*	4.71	*	5.21	6.58	3.60	4.91	3.17	3.43
802	3.22	5.35	3.21	5.05	3.72	5.06	3.43	4.97	3.73	5.28	2.81	4.00
803	4.25	5.25	4.60	5.75	4.25	5.10	*	5.55	3.75	4.85	3.41	4.41
804	1.02	3.30	2.64	2.39	2.31*	2.31*	2.86	4.07	0.99*	1.58*	1.95	1.46
805	3.30*	2.50*	3.60	2.80	3.10	2.80	3.30	2.30	1.70	3.20	1.60	3.10
806	4.09	4.89	3.82	5.25	3.95	4.72	3.34	4.31	4.39	5.13	3.02	3.75
807	4.68	5.23	6.22	7.67	5.79	7.52	11.30*	4.99	5.49*	8.22*	7.64	10.60*
808	2.14*	3.97*	2.90*	3.09*	2.99	4.74	3.13	2.51	2.00*	2.20*	1.63*	2.03*
809	3.32	4.80	3.69	4.56	3.83	4.96	3.70	5.03	2.90	3.89	2.24	3.75
810	5.51	3.65	11.50*	12.80*	10.70*	10.40*	7.91*	9.80*	9.78*	11.80*	8.24*	13.20*
811	27.70*	41.10*	26.90*	37.60*	26.40*	42.40*	23.60*	35.80*	23.20*	32.10*	21.90*	34.20*
812	4.19	5.70	3.17	4.72	4.19	5.42	2.66	3.65	5.30	5.11	4.01	3.85
813	4.27	7.83	5.79	7.45	4.84	7.86	4.42	7.50	4.10	7.81	3.81	4.23
814	3.58	5.61	3.79	4.70	3.48	4.33	34.30*	4.50	3.71	5.08	*	*
816	1.46	3.04	2.73	2.95	2.15	3.04	1.69	2.61	2.86*	1.12*	1.44	3.50
817	4.58	5.93	2.04*	*	4.62	5.69	5.29	5.08	5.20	5.90	5.72	5.21
818	6.95	4.43	6.94	7.27	6.19	7.19	6.31	7.48	6.38	7.25	4.98	7.86*
819	3.60	3.83	2.88	3.12	3.33	3.61	2.26	3.23	2.63	4.78	*	*
820	3.17*	3.13*	3.55	3.04	3.98	2.00	1.07*	1.87*	2.50	2.37	2.46*	1.79*
821	3.62	5.49	4.60	4.80	4.01	5.93	4.54	4.54	3.98	6.78	2.23	2.85

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-6.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDD ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	2.46	3.18	2.46	3.18	2.46	3.18	2.46	3.18	2.46	3.18	2.46	3.18
LABORATORY NUMBER												
801	2.40	3.38	2.24	3.38	2.02	2.89	2.53	2.95	1.58	3.92	0.74	1.00
802	2.31	2.47	2.08	2.67	2.02	2.65	1.98	2.70	1.82	2.72	1.17	*
803	2.10	2.60	2.40	2.80	2.00	2.30	*	2.70	2.00	2.58	1.98	2.05
804	5.24*	2.31	1.80	2.71	1.76*	1.58*	2.02*	2.35*	0.67*	0.95*	0.32	0.99
805	2.10	2.00	2.20	4.20	2.30	2.60	2.00*	1.00*	2.40	1.10	0.94	0.86
806	1.82	2.81	2.40	3.05	2.41	1.30	2.20	4.02	1.99	2.72	1.86	2.70
807	1.89	2.69	0.13*	1.50	2.26	3.63	3.42	2.05	2.00	1.41	0.47	2.58
808	1.20*	1.64*	1.14*	1.15*	1.40*	1.66*	1.11*	1.34*	0.64*	1.02*	0.32*	0.86*
809	2.71	3.66	2.84	4.06	3.14*	4.17*	3.00	3.94	2.52	4.03	1.23	1.37
810	3.63*	4.57*	4.02*	4.39*	2.00	5.05	2.81	4.04	2.86	3.73	1.28	1.03
811	29.30*	28.10*	24.60*	27.00*	26.40*	27.20*	24.40*	23.40*	25.30*	21.80*	21.40*	22.70*
812	1.77	2.06	2.14	2.23	1.92	2.10	2.38	2.45	2.44	2.52	1.03	1.11
813	2.59	3.17	2.30	3.07	2.46	3.12	2.44	2.51	2.37	2.61	1.29	1.97
814	3.70	3.99	3.00	3.87	3.23*	4.19	2.90	3.63	3.37	3.88	*	*
816	2.30	1.02	2.10	2.48	2.26	2.68	2.21	2.78	1.12*	2.17*	0.20	0.81
817	2.62	2.80	2.44	2.51	2.58	2.95	2.52	3.01	2.77	2.64	2.63	2.13
818	2.89	3.29	2.48	2.97	2.56	3.18	2.47	3.31	2.18	3.08	1.92	3.08
819	2.60	3.64	2.06	4.51	1.84	4.84	1.52	3.73	1.55	4.66	0.77	2.76
820	1.86	2.39	2.29	4.09	1.83	2.33	2.35	2.94	2.72	2.78	1.08	0.81
821	2.98	3.93	2.99	2.86	2.60	3.30	2.69	3.08	2.00	3.19	1.13	0.92

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-6. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 1

RAW DATA FOR 4,4 -DDD ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37	4.93	6.37
LABORATORY NUMBER												
801	5.95	7.87	4.96	5.23	4.62	5.09	4.77	6.33	3.20	5.52	1.59	4.96
802	3.76	5.57	4.64	6.04	4.65	4.68	5.29	4.51	5.31	5.54	4.19	2.53
803	4.20	5.50	4.22	3.60	3.80	4.82	4.00	6.80	4.00	5.00	4.00	4.20
804	0.99*	5.04	4.40	4.95	2.75*	4.73*	3.08*	3.96*	1.59*	4.35*	1.80	1.70
805	3.50	4.40	2.80	4.40	3.20	2.80	2.60*	3.60*	4.20	3.90	2.50	5.10
806	4.40	6.19	4.13	5.70	4.23	6.04	5.83	4.98	4.28	4.43	2.22	4.49
807	4.72	5.62	5.32	4.22	5.45	7.15	3.16	9.34*	2.92	3.18	1.94	1.03
808	2.18*	3.39*	1.94*	3.49*	1.50*	2.22*	2.70*	2.84*	1.43*	1.98*	0.56*	0.75*
809	5.53	6.54	5.83	8.16	6.25*	7.73*	5.85	7.45	4.57	6.82	2.81	3.08
810	6.90*	9.09*	7.22*	10.10*	6.18	5.21	4.49	7.32	7.35*	6.80	4.30	3.83
811	44.50*	43.60*	40.70*	40.20*	42.50*	42.20*	40.10*	41.40*	42.50*	42.70*	37.80*	39.70*
812	4.08	5.51	3.65	5.53	4.78	5.96	3.96	6.06	4.21	5.23	2.15	2.24
813	4.61	5.23	4.78	5.94	4.48	5.77	4.39	5.38	3.71	7.47	2.80	4.66
814	6.00	7.14	5.99	6.23	4.27	6.51	7.04	6.33	8.58*	5.95	*	*
816	4.04	4.92	3.51	4.58	4.57	3.95	1.33	5.60	2.58*	2.32*	1.33	0.99
817	5.50	5.05	5.12	5.30	5.27	5.32	5.10	*	5.07	5.66	5.45	3.71
818	4.55	5.53	4.76	5.31	4.63	5.50	4.45	5.28	4.00	5.42	4.21	4.61
819	5.12	4.04	4.24	4.63	4.64	6.97	4.19	6.08	4.58	6.87	4.02	5.67
820	*	5.54	4.85	5.23	3.44	5.66	4.26	5.19	4.11	5.87	1.35	2.09
821	4.45	6.13	4.60	7.12	3.23	3.83	5.16	6.76	4.33	5.67	1.35	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDD ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29	17.25	22.29
LABORATORY NUMBER												
801	16.90	21.30	15.60	*	15.40	*	17.20	20.90	12.40	16.10	8.34	11.50
802	12.02	18.47	12.61	17.86	14.71	18.36	15.31	18.81	14.26	18.77	6.65	11.40
803	15.30	17.50	15.00	19.50	13.80	18.00	*	19.30	14.00	17.60	12.00	16.00
804	4.40	13.30	10.30	10.50	10.90*	10.70*	10.60*	15.10*	3.58*	4.90*	3.71	4.37
805	14.40	10.70	16.70	9.80	14.70	11.50	15.60*	11.80*	8.40	15.30	6.30	5.90
806	15.00	19.20	15.20	20.50	15.50	16.70	17.50	18.20	14.80	19.00	12.80	16.40
807	13.00	14.00	5.43*	8.03	15.40	19.30	29.10	12.80	11.30	15.90	6.28	7.56
808	10.09*	13.30*	9.98*	13.70*	7.48*	12.60*	12.60*	11.32*	5.16*	8.53*	3.45*	6.10*
809	16.30	22.10	18.40	23.60	19.10*	24.40*	17.50	24.20	14.20	19.30	9.54	11.60
810	27.20*	38.60*	25.40*	29.80*	27.00*	30.90	22.80	26.20	20.10	24.90	9.09	17.60
811	54.00*	71.10*	59.80*	68.80*	53.60*	65.70*	55.10*	58.50*	59.60*	56.30*	59.40*	57.40*
812	15.90	20.50	14.10	19.10	15.50	18.50	22.00	18.40	13.40	13.80	6.10	8.47
813	21.60	29.80	21.90	29.50	18.80	31.30	25.60	28.70	17.10	31.20*	15.90	19.00
814	1.87	23.50	17.00	22.60	17.20	20.10	119.00*	20.40	17.30	22.90	*	*
816	10.00	18.40	14.70	17.00	13.90	17.10	14.30	17.00	10.90*	11.40*	9.62	4.92
817	23.19	23.72	10.08*	*	17.16	22.27	18.48	21.24	22.52	23.01	17.73	18.41
818	16.90	19.20	17.50	19.20	16.80	18.10	17.20	19.20	15.80	15.80	12.90	16.30
819	17.30	23.10	16.60	21.30	18.10	20.70	14.80	17.30	12.90	21.70	12.00	13.50
820	13.30	15.30	14.50	17.16	16.40	9.39	13.75	14.50	14.33	16.20	6.66	6.31
821	15.60	21.60	16.90	20.40	15.70	20.80	16.90	21.70	12.50	19.10	7.85	1.08

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-7.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64	1.31	1.64
LABORATORY NUMBER												
801	1.26	1.59	1.25	1.71	1.15	1.38	1.36	1.54	0.80	1.76	0.41	0.46
802	1.16	1.44	0.95	1.59	0.99	1.36	0.98	1.44	0.79	1.30	0.69	*
803	1.10	1.35	1.30	1.40	1.09	1.40	*	1.30	0.95	1.22	0.92	1.04
804	2.36*	1.22	0.88	1.56	0.97	0.84	1.13	1.20	0.28*	0.32*	0.17	0.47
805	0.76*	0.65*	0.81	3.00*	0.98*	0.78*	0.83*	0.30*	0.76*	0.36*	0.30	0.15
806	1.18	1.87	1.91*	2.38*	1.85*	2.29*	1.05	2.51*	1.49*	1.79*	1.57*	1.91*
807	1.52	1.89	0.29	2.08	1.17	1.79	1.71	1.48	1.25	0.59	0.21	1.42
808	0.60*	0.77*	0.58*	0.54*	0.59*	0.70*	0.57*	0.55*	0.49*	0.41*	0.31*	0.43*
809	1.13	1.49	2.17	1.47	1.33	1.41	1.26	1.29	1.23	1.25	0.44	0.41
810	1.80*	2.03*	1.97*	2.02*	1.70*	2.28*	1.19	1.74	0.98	1.35	0.56	0.46
811	14.90*	15.40*	13.00*	14.80*	14.20*	15.10*	12.70*	12.80*	12.70*	12.00*	11.90*	10.90*
812	0.99	1.19	1.20	1.50	1.09	1.30	1.29	1.74	1.20	1.38	0.64	0.59
813	1.46	1.72	1.33	1.70	1.34	1.61	1.38	1.39	1.32	1.36	0.70	1.09
814	1.35	1.32	1.07	1.28	1.18	1.40	1.04	1.16	1.03	1.22	*	*
816	1.42	0.64	1.32	1.50	1.39	1.61	1.39	1.73	0.62	1.22	0.09	0.49
817	1.11	1.45	0.98	1.51	1.11	1.73	1.27	1.70	1.22	1.50	1.24	1.11
818	1.33	1.68	1.38	1.81	1.36	1.73	1.23	1.73	1.03	1.63	0.88	1.59
819	1.58	2.34	1.19	1.67	1.21	2.24	0.79	1.91	0.96	2.24	0.33	0.69
820	0.87	1.23	1.19	1.79	0.89	1.12	1.15	1.32	1.14	1.22	0.27*	0.31*
821	1.52	1.94	1.51	1.45	1.36	1.76	1.34	1.67	0.94	2.07	0.49	0.39

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-7. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDE ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
TRUE VALUE UG/L	5 5.25	1 6.56	5 5.25	1 6.56	5 5.25	1 6.56	5 5.25	1 6.56	5 5.25	1 6.56	5 5.25	1 6.56
LABORATORY NUMBER												
801	5.49	7.55	5.58	5.61	4.73	5.30	2.72	6.15	2.90	4.96	1.35	4.83
802	3.45	4.86	4.63	3.98	3.98	4.69	4.51	4.00	4.09	4.56	2.71	3.98
803	4.10	5.35	4.20	5.02	4.00	5.16	4.40	5.30	3.50	4.50	3.58	3.80
804	1.02	4.22	0.96*	4.62	3.06	4.76	3.26	4.35	1.03*	3.39*	1.86	1.06
805	2.30*	3.60*	2.10	3.60	2.00*	2.20*	1.40*	3.50*	2.30*	2.70*	1.70	3.80
806	6.68	6.94	5.40*	8.91*	6.87*	9.09*	6.90	4.59	6.34*	7.98*	3.47*	7.20*
807	6.51	6.44	3.99	5.40	5.33	6.63	4.91	9.52*	2.56	2.24	1.93	0.95
808	2.19*	3.06*	2.03*	3.58*	1.15*	2.97*	2.35*	2.58*	1.34*	1.56*	1.39*	0.24*
809	3.31	5.19	4.08	6.90	4.18	6.42	3.81	5.61	2.77	5.10	1.78	2.05
810	6.69*	8.27*	7.06*	9.45*	5.99*	7.80*	3.83	6.26	5.82	4.85	3.24	3.42
811	29.30*	31.20*	26.30*	28.80*	28.20*	29.70*	26.30*	29.60*	28.90*	29.90*	28.20*	28.20*
812	4.40	6.24	3.99	5.69	5.53	7.25	4.70	6.35	4.25	5.48	2.02	2.14
813	4.98	5.39	5.23	6.18	4.59	5.71	4.63	5.57	3.79	5.50	2.83	4.91
814	3.53	3.83	3.46	3.70	2.57	3.81	5.33	3.56	7.09	3.48	*	*
816	5.02	5.34	3.89	5.14	5.02	4.50	1.73	6.05	2.83	4.49	1.81	0.97
817	5.30	6.35	5.33	6.92	5.16	6.80	5.12	*	4.97	6.77	5.45	3.84
818	4.09	5.89	4.22	5.76	4.01	4.89	4.10	5.83	4.46	5.07	4.32	4.78
819	5.28	3.92	4.24	4.58	5.13	6.95	4.50	6.42	4.32	6.13	4.32	*
820	*	4.92	4.54	6.00	3.24	4.67	3.78	4.61	3.58	4.50	1.18*	1.46*
821	4.46	6.08	5.51	6.66	3.29	3.74	5.65	6.43	4.07	4.68	1.27	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-7. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84	7.87	9.84
LABORATORY NUMBER												
801	7.88	9.54	7.62	*	7.41	*	8.36	9.57	4.91	5.52	2.96	3.94
802	5.42	8.12	6.15	8.28	6.82	7.98	6.96	7.78	6.22	7.25	6.65	4.09
803	7.25	8.00	7.25	8.75	6.50	8.35	*	8.66	5.75	6.95	5.25	6.00
804	2.21	6.12	4.85	3.91	5.53	4.93	5.27	7.40	1.36*	1.60*	1.76	2.16
805	4.80*	2.90*	6.10	3.00	4.70*	3.60*	5.20*	3.00*	2.40*	3.90*	1.80	1.90
806	9.09	11.90	10.10*	13.80*	10.30*	10.30*	12.90	9.33	9.03*	11.10*	9.11*	11.30*
807	8.92	9.35	16.00*	21.30*	7.21	9.12	13.70	7.96	4.16	7.17	2.81	2.94
808	3.83*	4.80*	3.64*	5.31*	2.30*	3.73*	3.60*	2.87*	2.57*	2.39*	1.04*	1.12*
809	5.46	5.74	6.74	7.70	6.75	7.53	5.81	7.16	6.49	5.75	2.84	3.40
810	10.50*	15.20*	9.78*	11.60*	10.90*	12.40*	8.58	9.95	9.91	7.80	3.36	6.02
811	35.20*	40.00*	32.30*	37.80*	34.30*	35.40*	29.70*	32.10*	40.80*	30.40*	31.80*	31.80*
812	8.49	10.20	6.78	9.20	7.85	9.89	9.71	10.30	9.36	7.49	2.32	3.98
813	10.70	12.00	10.90*	12.50	9.09	12.70	9.28	13.70*	8.04	13.20*	7.99	7.88
814	5.78	6.65	5.75	6.66	5.80	6.28	36.80*	6.32	5.56	6.64	*	*
816	5.50	9.94	7.83	9.52	7.47	9.52	7.63	8.02	5.13	5.91	5.39	2.57
817	9.99	9.87	4.11*	*	7.86	10.03	8.49	9.63	8.51	10.28*	8.55	8.43
818	8.45	9.13	8.56	9.11	8.63	8.42	9.68	8.73	7.44	6.82	6.02	7.13
819	6.92	9.62	7.07	8.28	7.50	8.91	5.46	7.23	4.38	8.27	3.80	4.98
820	6.12	7.21	6.89	7.00	6.97	3.23	6.26	6.56	5.49	6.00	2.11*	2.18*
821	5.86	5.34	7.70	9.22	6.74	8.70	7.99	9.65	5.08	7.42	2.91	3.74

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-8.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDT ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64	4.44	3.64
LABORATORY NUMBER												
801	5.13	4.02	4.11	5.24	4.40	3.10	4.95	3.68	2.53	4.49	1.25	0.93
802	3.32	3.13	3.11	3.69	2.95	3.02	3.19	3.08	2.29	2.92	1.68	*
803	4.55	3.06	5.15	4.20	4.10	2.75	*	4.10	4.95*	3.60*	3.75	2.17
804	5.90	2.32	2.73	2.90	2.99*	1.65*	3.35	2.50	0.85*	0.67*	0.40	0.71
805	2.70*	1.80*	3.00	6.10	3.00*	1.90*	2.50*	0.79*	2.80	0.99	1.10	0.64
806	3.77	3.83	5.85	4.36	5.58	3.56	3.55	5.62	4.24	3.53	4.30*	3.65*
807	3.91	3.18	0.24	2.46	3.56	3.69	4.76	2.25	1.38*	0.73*	0.16*	1.49*
808	1.93*	1.71*	1.80*	1.27*	1.33*	1.40*	2.07*	1.03*	0.87*	0.84*	0.30*	0.46*
809	3.95	2.66	7.20	3.38	4.53	3.29	3.93	3.04	4.01	2.95	1.20	0.79
810	7.97*	5.53*	9.43*	6.02*	4.20	6.82*	1.89*	1.92*	2.00	1.48	1.55	0.72
811	49.60*	46.40*	48.50*	42.30*	48.30*	43.40*	42.10*	41.80*	45.10*	33.00*	41.00*	39.70*
812	3.11	2.45	2.67	2.42	3.45	2.38	3.34	2.72	3.05	2.53	1.03	1.14
813	4.69	3.67	4.40	3.57	4.21	3.41	4.40	2.78	3.79	2.78	1.81	2.16
814	5.86	2.55	2.61*	2.59*	2.86	2.86	2.37	2.40	2.74	2.62	*	*
816	4.22	1.28	4.27	2.76	4.74	3.43	4.48	4.07	1.81	2.63	0.44	0.32
817	5.24	4.02	4.01	4.05	3.91	3.91	3.86	3.83	4.27	3.44	3.52	2.42
818	3.71	4.39	3.72	3.85	4.08	4.68	3.97	4.53	3.42	3.32	2.25	3.37
819	5.82	7.50*	4.00	4.69	3.33	5.08	3.27	5.84	2.28	4.94	0.99	3.63
820	3.56	2.92	4.92	*	4.28	2.84	5.40	4.00	4.28	3.43	1.20	0.93
821	3.95	3.41	5.37	3.27	4.51	3.57	4.78	3.44	3.49	3.56	1.67	0.99

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

EPA Form 2350-4 (4-80)
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TABLE A-8. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDT ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
TRUE VALUE UG/L	5 8.88	1 7.28	5 8.88	1 7.28	5 8.88	1 7.28	5 8.88	1 7.28	5 8.88	1 7.28	5 8.88	1 7.28
LABORATORY NUMBER												
801	5.03	8.58	7.72	6.58	7.74	6.42	8.23	7.67	5.45	6.13	2.19	5.50
802	5.93	4.25	7.65	6.14	7.25	4.77	7.53	4.49	6.82	5.63	4.19	2.39
803	7.90	8.10	9.50	6.76	8.20	5.88	8.80	6.90	8.68*	8.68*	6.30	6.04
804	1.47	4.82	7.24	4.96	4.42*	4.82*	4.96	4.15	1.88*	3.75*	2.28	1.47
805	4.50*	4.10*	4.10	4.13	3.00*	2.20*	2.90*	3.70*	4.00	2.50	2.53	4.00
806	10.40	3.52	10.70	9.64	10.20	9.10	11.45	4.13	9.47	5.48	5.67*	6.96*
807	9.83	6.97	7.73	4.19	9.80	7.37	5.88	7.78	3.24*	2.15*	1.42*	0.28*
808	3.71*	2.97*	3.33*	3.49*	3.40*	3.12*	4.82*	3.10*	2.33*	1.78*	1.05*	0.40*
809	6.37	6.21	7.74	8.56	8.06	8.09	7.21	6.77	6.76	7.30	2.93	2.01
810	15.40*	12.50*	17.10*	15.10*	14.40*	6.20	2.89*	3.54*	6.60	2.58	4.85	3.37
811	93.20*	83.60*	96.00*	77.80*	94.40*	81.70*	91.30*	76.80*	88.00*	78.00*	87.50*	74.10*
812	6.70	6.33	7.16	3.10	8.99	7.20	8.08	5.94	5.94	5.02	2.44	2.82
813	8.13	6.14	8.29	6.92	7.58	6.55	7.37	6.10	5.62	5.96	4.06	5.33
814	6.24	3.70	6.22*	3.43*	4.14	3.87	8.62	4.05	8.47	3.46	*	*
816	9.45	5.87	6.30	5.52	8.52	4.83	2.41	6.13	5.19	5.00	1.49	0.29
817	7.80	10.08	7.84	10.92	7.50	9.93	7.21	*	6.76	10.88*	7.10	4.81
818	7.48	6.05	7.76	5.79	7.89	5.89	8.12	5.72	7.80	5.08	6.58	4.92
819	12.30	5.06	9.56	6.32	10.80	12.09	10.40	9.44	9.57	6.88	9.29	6.00
820	*	5.88	9.57	5.65	6.11	7.33	8.51	6.98	7.92	6.83	2.19	1.22
821	8.65	7.75	3.38	8.66	5.49	3.91	9.42	8.03	6.68	6.18	2.05	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-8. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR 4,4 -DDT ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20	22.20	18.20
LABORATORY NUMBER												
801	21.90	17.30	20.20	*	19.90	*	22.40	17.90	14.60	11.80	22.60	7.68
802	13.54	14.99	15.34	17.11	16.94	14.62	17.83	14.15	16.05	13.72	7.07	6.45
803	23.00	16.00	25.30	21.10	20.50	18.50	*	19.10	32.00*	21.30*	26.80	15.30
804	5.53	9.72	11.40	6.46	13.10*	7.71*	12.40	11.60	3.52*	2.85*	3.52	3.02
805	14.70*	6.00*	16.50	6.00	15.70*	7.10*	15.10*	6.20*	7.50	8.40	5.00	3.20
806	22.20	19.90	24.70	27.20	24.50	17.00	27.50	19.70	22.10	18.90	21.90*	17.80*
807	25.40	19.20	14.70	14.40	20.50	20.40	42.00	12.90	9.46*	11.20*	3.56*	2.17*
808	12.08*	8.61*	11.58*	9.90*	12.09*	7.15*	16.69*	7.10*	5.10*	4.72*	2.51*	3.15*
809	16.10	12.20	20.00	16.00	20.10	15.90	16.80	15.50	17.30	12.10	7.36	6.79
810	46.90*	24.20*	46.30*	31.50*	50.80*	35.10	18.90*	12.00*	15.50	12.80	9.55	12.10
811	133.00*	142.00*	149.00*	132.00*	139.00*	120.00*	139.00*	105.00*	157.00*	97.90*	142.00*	98.10*
812	18.60	15.00	17.00	14.40	19.00	14.70	17.20	11.50	15.90	18.40	6.40	5.21
813	29.10	27.10	29.40	30.20	24.10	29.70	38.10	31.10*	21.00	30.90*	17.90	14.70
814	18.60	16.60	12.30*	13.80*	14.60	11.60	150.00*	12.00	15.10	13.80	*	*
816	16.60	17.20	17.50	16.30	15.50	17.20	16.90	15.00	11.80	10.40	12.90	2.96
817	28.24	18.19	13.08*	*	25.63	17.40	25.38	17.88	28.15	17.79	18.90	18.41
818	19.20	14.10	20.50	14.30	20.80	12.70	19.50	14.50	17.80	12.00	14.40	12.50
819	33.90	25.90	33.90	23.10	35.60*	24.40	24.20	19.90	21.20	21.90	20.90	13.70
820	21.30	16.41	24.30	16.60	18.40	7.81	21.20	16.00	19.23	13.70	4.95	3.31
821	22.60	20.20	24.40	17.20	23.10	18.70	25.30	18.00	14.40	14.30	9.00	7.55

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-9.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR DIELDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32	1.75	1.32
LABORATORY NUMBER												
801	1.39	1.33	1.36	1.36	1.35	1.19	1.57	1.50	1.88	1.17	0.95	1.13
802	1.42	1.09	1.41	1.00	1.33	1.09	1.28	1.14	1.51	1.08	1.26	0.83
803	0.59*	0.47*	0.65*	0.51*	0.60*	0.46*	0.60*	0.44*	0.57*	0.42*	0.99	0.37
804	*	1.27	0.50	0.99	1.45	1.13	1.53	1.13	0.45	1.31	*	0.41
805	1.12	0.86	1.19	0.14	1.30	0.89	1.50	1.10	1.12	0.97	1.00	0.59
806	2.41	0.39	3.62*	1.34	2.52	2.04*	0.90	0.23*	*	*	0.70	0.75
807	2.08	1.49	2.04	1.59	1.39	1.50	1.71	1.29	0.21*	0.33*	0.21	0.33
808	1.17	0.79	1.35	0.75	1.14	0.79	1.24	1.06	0.56*	0.38*	0.31*	0.19*
809	1.49	1.33	1.59	1.52	1.69	1.42	1.76	1.46	1.69	1.47	1.16	0.88
810	1.16	1.07	1.00	0.52	1.38	0.87	1.65	1.50	1.11	0.97	0.54	0.48
811	14.00*	10.60*	11.80*	10.10*	13.60*	10.20*	14.40*	10.40*	5.10*	9.33*	10.40*	9.25*
812	1.73	1.21	1.59	1.28	1.73	1.20	1.48	1.44	1.76	1.25	1.04	0.60
813	2.05	1.24	1.23	1.27	1.99	1.28	1.87	1.48	1.82	1.14	1.34	1.13
814	2.91*	2.35*	2.91*	2.38*	*	2.38*	4.38*	2.64*	2.99*	1.41*	2.58*	1.84*
816	1.75	*	1.47	1.27	1.20	0.94	1.68	1.20	1.30	0.99	0.24*	0.19*
817	1.61	1.19	1.95	0.71	1.72	1.09	1.59	0.84	1.66	1.13	0.82	0.74
818	2.00	1.59	1.88	1.48	2.02	1.32	2.05	1.54	1.93	1.45	1.80	1.17
819	5.13*	2.52*	4.62*	2.41*	3.45*	2.12*	4.84*	2.08*	2.25*	2.32*	3.82*	1.94*
820	0.55*	0.64*	0.45*	1.00*	0.45	0.85	0.46*	0.69*	0.47	0.72	0.17*	0.20*
821	*	*	*	*	1.30	1.13	1.79	1.31	1.62	1.15	0.19*	0.09*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-9. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 2

RAW DATA FOR DIELDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	5	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64	3.50	2.64
LABORATORY NUMBER												
801	2.93	2.44	3.06	2.52	2.77	2.18	2.83	2.36	3.05	2.11	2.23	1.73
802	4.31	2.12	3.67	1.85	3.76	2.14	3.39	1.98	4.04	2.10	3.31	1.51
803	1.15*	0.90*	1.40*	1.01*	1.09*	0.94*	1.20*	0.80*	1.14*	0.79*	0.87	0.65
804	3.24	0.60	2.53	2.23	3.15	2.57	3.29	2.51	3.59	2.47	1.28	0.85
805	3.50	1.85	1.70	2.15	2.90	1.90	2.50	2.10	2.30	1.95	2.20	0.94
806	0.46*	3.85	3.72	2.62	2.55	1.33	5.68*	0.80	*	0.30*	1.57	1.31
807	10.20*	3.83	4.09	2.99	4.49	3.30	3.78	2.88	0.97*	0.67*	0.97	0.67
808	2.95	1.41	2.66	1.66	2.52	1.75	1.72	1.43	1.13*	1.71*	0.80*	0.29*
809	3.83	3.34	3.94	3.35	4.38	3.40	3.72	3.19	3.77	2.81	2.04	2.47
810	2.70	2.36	2.24	1.23	2.33	2.10	3.62	2.49	2.71	2.13	0.49	0.91
811	18.40*	23.80*	13.50*	25.10*	12.70*	24.00*	10.60*	15.10*	11.80*	14.80*	11.50*	11.90*
812	3.38	2.50	3.54	2.32	3.28	2.54	3.16	2.72	3.26	2.62	1.99	1.47
813	3.53	2.89	3.31	2.53	3.69	2.38	3.26	2.58	3.57	1.59	2.83	1.88
814	5.76*	4.65*	4.75*	3.95*	5.60*	4.30*	4.53	1.49	5.59*	3.88*	4.01*	3.48*
816	3.25	2.15	3.05	1.91	3.05	2.05	3.35	2.58	3.00	1.97	0.90*	0.46*
817	2.96	2.57	2.69	2.52	2.96	2.36	3.04	2.25	*	2.10	2.23	2.20
818	3.45	2.83	3.90	2.74	3.44	2.67	3.82	2.79	3.78	3.13	2.77	2.74
819	5.64*	5.39*	5.24*	4.63*	6.02*	4.99*	4.23*	5.57*	5.02*	4.83*	4.69*	4.30*
820	1.75*	2.15*	1.69*	2.20*	1.49	1.83	1.48*	1.91*	1.57	1.92	0.38*	0.53*
821	*	*	*	*	2.85	2.36	3.12	2.49	3.63	2.68	0.38*	0.26*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-9. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I M V S: PAGE 174

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR DIELDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24	12.26	9.24
LABORATORY NUMBER												
801	9.41	8.33	9.55	8.43	9.34	9.27	8.61	9.03	8.96	8.32	6.43	7.15
802	8.58	10.64	8.79	8.90	8.71	9.52	8.00	9.12	7.59	9.16	6.97	9.01
803	3.70*	3.00*	4.70*	3.50*	4.10*	3.06*	4.25*	1.30*	4.10*	3.00*	4.30	2.55
804	10.80	7.22	4.20	8.28	8.32	8.00	11.00	8.24	12.20	8.19	8.21	4.81
805	10.10	8.10	7.90	8.30	7.25	5.90	8.20	10.50	11.20	7.80	7.10	7.30
806	17.70*	12.30	12.70	10.39	15.20	5.60	9.84	2.04*	*	*	5.21	3.09
807	10.90	4.44	10.30	10.00	13.20	11.00	11.50	9.84	2.75*	2.55*	2.75	2.55
808	9.30	6.77	8.83	7.23	8.88	6.49	7.46	5.54*	4.55*	3.56*	2.59*	1.71*
809	10.90	8.88	12.60	8.85	12.00	9.00	11.70	8.75	11.30	7.79	7.63	4.38
810	8.29	7.91	9.74	7.27	4.65	8.64	6.94	8.73	10.40	8.33	3.82	3.33
811	19.90*	6.20	20.10*	6.24	21.80*	7.09*	37.70*	6.17*	38.30*	8.01*	27.20*	10.30*
812	11.60	8.72	11.80	8.88	11.80	9.02	10.50	9.44	11.00	8.44	8.62	4.80
813	12.30	9.16	12.70	9.99	12.50	10.40	10.40	9.39	12.10	7.84	7.00	5.65
814	18.40*	14.00*	21.20*	14.30*	15.60*	11.40*	21.60*	13.80*	20.30*	13.70*	13.80*	11.70*
816	11.10	8.64	6.72	9.49	9.94	8.70	8.75	9.01	7.98	6.92	0.63*	1.43*
817	10.88	8.15	9.42	8.17	9.03	6.36	10.88	7.53	11.10	10.06	9.98	4.52
818	11.60	7.96	12.20	7.49	12.30	7.50	11.90	8.20	12.40	8.18	10.80	6.80
819	29.00*	21.10*	31.08*	23.43*	26.34*	19.25*	28.18*	18.64*	29.31*	16.89*	26.49*	17.42*
820	3.84*	4.80*	2.91*	4.75*	3.60	8.90	4.40*	4.78*	3.77*	4.22*	0.62*	0.98*
821	*	*	*	*	9.36	7.05	9.05	7.90	12.30	8.33	0.32*	0.90*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-10.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN I ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 5	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	1.68	1.25	1.68	1.25	1.68	1.26	1.68	1.26	1.68	1.26	1.68	1.26
LABORATORY NUMBER												
801	1.46	1.36	1.43	1.42	1.45	1.44	1.67	1.55	1.38	1.61	0.81	1.25
802	1.60	1.46	1.41	1.23	1.53	1.44	1.53	1.74	1.54	1.43	0.89	*
803	1.40	1.20	1.66	1.17	1.37	1.22	1.57	1.01	1.29	1.07	4.34*	0.98
804	*	1.05	0.59*	2.09*	1.51	1.30	1.52	1.21	0.00*	0.43	*	*
805	1.12	0.88	1.14	0.10*	1.40	0.91	1.70	1.29	1.31	0.99	1.60	0.59
806	2.63	1.92	3.70*	1.41	8.29	5.38*	0.71*	3.18*	*	*	0.87	0.21
807	2.23	1.30	*	1.58	8.14	1.42	1.72	1.28	1.52	1.29	0.39	0.32
808	1.14*	0.92*	1.09	1.04	1.04*	0.92*	1.37*	0.97*	0.61*	0.59*	0.42	0.12
809	1.26	1.15	1.28	1.15	1.41	1.21	1.41	1.20	1.43	1.37	11.70*	0.79
810	1.58	1.61	1.24	0.81	1.86	1.23	0.49*	0.48*	1.48	0.46	0.71	3.74
811	12.40*	9.09*	10.39*	9.23*	12.90*	8.72*	14.70*	9.09*	9.81*	8.16*	9.20*	8.15*
812	1.65	1.25	1.64	1.29	1.71	1.30	1.66	1.56	1.69	1.20	1.25	0.66
813	1.66	1.38	1.34	1.36	1.57	1.24	1.96	1.26	1.47	1.12	1.10	1.55
814	1.45	0.92	1.81*	2.11*	*	2.08*	1.85*	2.06*	1.50	1.32	0.98	1.64
816	1.80	*	1.45	1.33	2.01	0.91	1.67	1.26	1.36	1.06	0.24*	0.22*
817	0.89	1.17	1.38	0.97	1.28	1.42	1.52	0.93	0.90*	1.09	6.36	0.89
818	1.59	1.25	1.54	1.36	1.63	1.17	1.66	1.29	1.47	1.32	1.42	1.10
819	5.10*	2.70*	4.24*	2.72*	4.92*	2.08*	3.84*	2.19*	4.15*	2.55*	*	*
820	0.48*	0.34*	0.59*	0.49*	0.32*	0.37*	0.43*	0.37*	0.37*	0.29*	0.14*	0.15*
821	*	*	*	*	1.30	1.15	1.61	1.26	1.59	1.16	0.21	1.04

* = REJECTED

WATER LEGEND
1 = DISTILLED WATER
2 = TAP WATER
3 = SURFACE WATER
4 = WASTE WATER 1
5 = WASTE WATER 2
6 = WASTE WATER 3

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TABLE A-10. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN I ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79	5.04	3.79
LABORATORY NUMBER												
801	4.44	3.53	4.46	3.57	4.62	3.36	4.35	3.60	4.61	3.36	3.67	2.34
802	6.53	3.84	5.13	2.75	5.68	3.23	5.88	3.17	6.17	3.90	13.04*	1.92
803	4.44	3.20	4.68	3.26	4.11	3.47	4.26	3.46	4.38	3.26	3.59	2.32
804	4.11	3.23	4.14	3.42	4.66	3.77	4.76	3.60	3.42	2.64	1.48	1.48
805	4.76	3.20	1.70*	2.93	4.60	3.24	4.60	3.05	5.00	3.20	2.98	4.00
806	4.90	5.37	5.54	4.03	5.38	2.61	6.18	0.56*	*	0.71*	*	0.22
807	0.64*	5.65	4.09	2.98	5.88	0.65*	5.34	3.94	3.16	3.79	1.46	1.02
808	3.38*	2.19*	3.41	2.43	3.36*	2.52*	2.41*	2.56*	2.25*	2.85*	1.51	0.42
809	4.89	4.19	4.34	3.52	5.50	4.27	4.84	3.83	4.75	3.52	2.40	3.15
810	5.47	4.11	5.13	3.96	5.43	4.25	2.69*	3.46*	3.60	2.06	3.56	0.16
811	22.50*	24.50*	18.30*	16.00*	20.00*	13.60*	13.70*	11.90*	14.00*	12.00*	12.00*	10.80*
812	5.12	3.72	5.52	3.52	4.90	3.90	4.92	4.60	4.80	3.88	3.06	2.26
813	4.53	3.90	5.06	3.70	4.77	3.58	5.25	4.28	4.67	2.40	3.34	2.99
814	7.08	5.65	7.15*	5.74*	7.43*	5.39*	7.39*	4.22*	6.88	5.28	8.89*	3.64
816	4.60	2.81	4.14	1.85	4.36	2.99	4.70	3.47	2.92	2.77	1.34*	0.59*
817	4.68	3.55	4.41	3.77	4.32	3.95	4.58	3.50	*	3.73	3.48	3.35
818	3.65	4.07	4.82	3.81	5.17	3.92	5.22	3.95	5.14	3.75	3.48	3.50
819	8.87*	8.32*	7.99*	7.95*	8.26*	8.09*	6.54*	8.10*	3.66	7.64*	*	*
820	1.48*	1.00*	1.39*	1.05*	1.15*	1.00*	1.30*	0.87*	1.16*	0.95*	0.28*	0.27*
821	*	*	*	*	4.10	3.44	4.30	3.38	5.10	3.93	3.17	4.43

* = REJECTED

WATER LEGEND
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1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-10. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN I ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11	13.44	10.11
LABORATORY NUMBER												
801	11.40	9.85	10.90	10.10	11.40	10.10	10.90	10.30	10.30	9.94	7.67	7.63
802	14.70	11.86	13.58	10.25	13.01	11.35	11.90	13.85	13.05	12.48	12.12	10.24
803	11.20	9.30	13.70	10.50	12.30	9.32	15.50*	9.07	12.40	9.05	12.10	8.72
804	9.28	8.20	7.40	9.92	13.00	9.17	12.30	9.15	10.60	7.26	8.69	4.80
805	7.90	9.73	7.99	10.80	8.50	9.86	10.00	12.70	12.60	9.90	8.55	8.80
806	13.10	12.50	13.50	10.50	15.10	9.84	1.14*	8.76	*	*	4.13	0.39
807	10.80	2.55*	13.30	10.60	2.66*	11.00	12.90	10.50	8.34	7.00	3.43	2.85
808	8.93*	6.75*	8.62	8.05	8.78*	7.72*	8.58*	5.89*	5.36*	5.22*	3.24	2.04
809	10.80	8.54	10.60	7.49	11.70	8.60	11.50	9.11	11.00	8.09	8.52	4.26
810	14.30	11.60	13.10	9.55	7.56	12.70	1.14*	5.78*	10.90	9.65	7.55	4.87
811	28.70*	11.90*	26.40*	10.53*	25.20*	9.63*	31.80*	10.00*	100.00*	9.07*	21.60*	11.30*
812	13.20	9.84	13.40	10.30	13.60	10.30	12.60	10.90	12.50	9.66	10.60	6.14
813	11.35	8.08	12.97	11.10	12.39	10.90	11.25	9.17	12.03	8.46	6.30	*
814	16.60	13.20	18.40*	11.60*	11.20	12.30	18.40*	12.90*	16.50*	12.90	*	12.30
816	12.80	9.70	10.40	9.95	11.10	9.64	11.30	10.10	9.45	8.00	1.15*	1.70*
817	13.81	10.74	12.20	10.44	12.85	8.77	12.63	9.30	12.11	11.41	10.59	6.76
818	12.20	7.22	12.30	7.12	12.10	6.82	12.20	7.21	12.90	7.01	11.40	7.75
819	26.14*	27.44*	38.16*	25.11*	31.33*	26.50*	33.36*	20.86*	29.73*	23.44*	*	*
820	3.22*	2.43*	5.00*	2.36*	2.92*	4.27*	3.20*	2.72*	2.71*	2.26*	0.59*	0.48*
821	*	*	*	*	10.30	7.78	10.20	8.83	11.30	9.21	2.50	1.12

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-11.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN II ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	2.80	2.27	2.80	2.27	2.80	2.27	2.80	2.27	2.80	2.27	2.80	2.27
LABORATORY NUMBER												
801	2.09	2.12	2.17	1.37	2.01	2.19	2.75	2.07	1.94	2.06	1.66	1.79
802	5.09	4.29	4.15	3.40	4.45*	4.01*	4.45	3.51	5.27	4.27	3.39	4.32
803	5.30*	4.59*	5.16*	3.62*	5.02*	4.41*	2.97	4.02	5.20*	4.23*	11.10*	4.09*
804	*	0.00*	0.00*	0.00*	2.09	*	2.22	1.96	0.60	1.71	*	0.77
805	3.35*	4.19*	3.80	3.23	3.40	2.70	5.80*	4.60*	4.10*	3.68*	5.20*	2.60*
806	4.28	2.43	0.94	3.35	0.77	2.44	1.83	2.56	*	*	1.03	2.07
807	2.36	8.00*	0.07	1.53	0.89	1.95	2.21	2.10	1.60	1.24	0.79	0.72
808	1.73	1.26	1.45	1.20	1.54	1.45	2.23	1.97	1.14*	0.33*	0.65	1.55
809	2.56	2.01	2.06	1.73	2.73	2.07	2.65	2.57	2.38	2.24	1.90	1.37
810	1.72	1.71	1.76	1.55	2.34	1.40	2.09	1.38	1.73	1.63	1.28	1.13
811	1.00	19.95*	1.45	19.40*	1.20	19.10*	0.50	18.20*	9.67*	16.40*	9.67*	18.70*
812	2.52	1.95	2.35	2.03	2.52	2.20	4.02	1.92	2.71	2.17	1.92	1.28
813	3.16	2.17	2.95	2.45	3.06	2.32	3.31	2.39	2.92	2.36	1.95	2.30
814	4.16	3.14	3.42	3.32	*	3.34	4.94	3.62	6.84	2.15	3.32	2.00
816	1.28	*	2.33	2.01	2.50	1.64	2.45	2.23	2.10	1.74	0.59	0.55
817	0.51*	*	0.55*	*	0.19*	*	1.20*	*	0.49*	*	0.45*	*
818	2.76	2.47	2.77	2.65	2.86	2.52	2.87	2.55	2.73	2.20	2.72	2.73
819	4.99	4.07	5.26*	4.41*	6.55*	3.51*	7.03	2.74	4.26	4.01	5.52*	3.68
820	0.65*	0.44*	0.66*	0.58*	0.51*	0.57*	0.63*	0.66*	0.60*	0.52*	0.24*	0.18*
821	2.47	2.45	1.99	1.84	1.93	1.66	6.13	1.98	2.42	1.85	0.54*	0.23*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-11. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN II ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	4	6	4	6	4	6	4	6	4	5	4	5
TRUE VALUE UG/L	5.63	4.54	5.60	4.54	5.60	4.54	5.60	4.54	5.60	4.54	5.60	4.54
LABORATORY NUMBER												
801	4.52	3.76	4.22	3.73	4.17	3.92	4.08	3.63	4.32	1.26	3.60	2.72
802	10.73	7.09	8.56	5.88	10.79*	5.70*	9.96	5.97	9.71	7.21	9.29	6.94
803	11.13*	7.46*	11.00*	8.25*	9.54*	8.31*	9.51	7.45	10.80*	8.45*	11.10*	7.62*
804	0.03*	0.03*	0.00*	0.00*	4.11	3.86	4.68	4.29	3.54	3.63	2.39	1.60
805	10.30*	11.10*	5.00	8.31	10.00	10.20*	13.50*	9.20*	12.00*	16.30*	11.90*	10.90*
806	3.79	3.19	5.75	4.11	5.76	3.92	1.96	1.04	*	2.77*	4.13	4.66
807	0.25	4.39	3.49	0.22	4.98	0.35	5.38	2.79	2.53	2.01	1.83	1.40
808	4.80	1.73	4.45	1.79	4.82	1.11	2.29	3.16	2.63*	1.58*	1.55	0.35
809	4.74	5.41	5.05	3.57	6.25	5.28	5.87	4.66	5.41	4.16	3.14	4.40
810	4.31	3.64	3.12	2.85	4.01	3.30	4.47	3.39	4.03	3.41	0.49	1.82
811	11.40	3.79	10.60	4.21	10.20	2.83	8.79	2.22	10.90*	3.01*	11.70*	8.81*
812	4.94	3.95	4.95	3.96	4.97	4.03	4.76	2.94	4.80	3.98	3.08	2.88
813	6.10	5.85	5.97	2.60	6.37	2.90	*	5.21	8.73	3.35	5.55	4.00
814	6.60	5.43	7.71	5.65	6.69	5.04	6.02	4.22	6.48	4.83	*	*
816	5.43	2.93	5.73	3.15	5.61	3.36	5.25	4.01	4.21	3.31	1.40	0.98
817	*	1.59*	0.32*	1.08*	*	1.59*	*	1.72*	*	1.21*	0.20*	0.55*
818	5.68	5.29	6.03	5.26	5.82	5.08	5.73	5.18	5.69	5.36	6.24	5.07
819	7.80	8.65	8.94*	6.33*	10.94*	7.19*	7.83	5.61	6.38	8.51	6.05	5.60
820	1.45*	1.05*	1.50*	1.15*	1.11*	0.93*	1.45*	0.85*	1.30*	1.04*	0.42*	0.36*
821	5.40	4.01	3.46	2.92	5.48	4.42	4.84	11.70*	5.84	4.49	1.14*	0.82*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDOSULFAN II ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	14.00	11.34	14.00	11.36	14.00	11.36	14.00	11.36	14.00	11.34	14.00	11.36
LABORATORY NUMBER												
801	9.41	8.89	9.93	9.79	9.98	8.94	9.08	10.70	9.63	9.49	7.62	8.89
802	22.42	21.32	20.55	15.74	24.93*	19.49*	21.59	22.03	20.44	18.31*	17.62	20.38
803	27.60*	20.60*	25.40*	21.80*	29.20*	21.80*	20.90	19.20	26.40*	21.40*	31.20*	23.40*
804	0.00*	0.00*	0.00*	0.00*	9.27	8.24	11.80	8.86	9.38	7.48	9.60	7.04
805	31.20*	40.00*	18.50	30.30*	18.20	25.70*	23.40*	36.90*	28.40*	32.70*	23.20*	*
806	1.77	15.50	7.21	11.00	12.70	9.75	9.59	10.90	*	*	6.25	3.59
807	12.90	1.07	8.50	8.23	8.08	10.60	11.80	9.93	6.15	4.89	4.52	3.87
808	9.43	8.20	8.35	7.99	9.91	8.12	9.75	8.53	4.36*	4.94*	3.01	0.86
809	11.00	9.54	9.47	8.13	11.90	9.96	12.00	9.51	11.40	9.15	9.39	6.04
810	8.22	9.36	9.91	7.75	9.36	9.65	9.67	9.48	10.30	9.06	4.49	3.53
811	45.00*	42.30*	47.90*	45.40*	51.30*	44.20*	47.20*	35.60*	48.50*	32.80*	59.20*	37.60*
812	12.70	9.90	12.50	10.10	12.50	9.59	13.00	10.20	11.80	9.82	10.60	6.36
813	12.90	10.70	13.50	11.40	14.50	11.70	12.80	11.00	13.80	11.20	8.54	6.77
814	15.40	13.30	13.60	12.60	27.30*	14.40*	17.30	12.60	13.20	13.20	12.10	11.10
816	9.59	12.80	10.70	12.20	3.66	11.00	12.30	11.10	11.80	9.42	1.15	2.97
817	*	1.06*	*	0.66*	*	0.66*	*	0.35*	*	0.82*	*	1.86*
818	14.20	9.57	14.60	9.77	13.70	9.85	13.60	9.13	14.00	10.10	13.70	9.86
819	23.68	22.00	28.33*	19.09*	27.57*	22.21*	25.71	19.41	28.21*	26.19*	20.73	18.50
820	2.81*	2.40*	9.00*	2.33*	2.43*	1.84*	2.99*	3.03*	3.36*	2.26*	0.54*	0.74*
821	9.16	10.20	10.00	9.14	13.80	11.00	11.00	9.41	13.40	10.80	2.75*	1.78*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-12.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR ENDOSULFAN SULFATE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86	4.95	3.86
LABORATORY NUMBER												
801	6.94	3.95	2.45	4.17	3.98	2.00	5.26	2.77	3.34	4.52	2.63	4.65
802	3.01	2.45	2.44	2.67	2.98	2.18	3.56	2.20	2.91	2.35	2.40	2.08
803	1.82	3.68	4.30	4.06	3.10	4.20	*	3.44	3.96	3.30	3.90	2.90
804	*	*	*	*	*	*	*	*	*	*	*	*
805	3.80	1.80	3.60	10.40*	3.60	1.20	3.80	1.90	3.90	1.10	2.63	1.00
806	5.78	5.42	5.38	3.72	4.06	2.66	7.73	0.94	2.66	3.73	7.14	5.54
807	1.84*	2.24*	0.69*	1.03*	2.02	1.94	3.72	1.09	1.25*	1.41*	0.62	1.96
808	2.80	2.03	2.11	2.10	3.16*	1.69*	2.20	1.20	2.06	1.90	1.49*	1.60*
809	5.51	4.49	5.81	4.54	5.73	3.59	5.58	4.44	6.11*	4.02	4.17	2.76
810	*	*	*	*	*	*	*	*	*	*	*	*
811	*	20.00*	*	16.50*	*	18.30*	*	17.20*	*	16.00*	*	16.10*
812	3.03	2.48	3.80	3.39	3.61	2.81	4.77	3.74	3.53	2.63	1.09	1.41
813	3.48	3.54	4.74	3.98	4.23	3.62	5.06	3.11	4.46	3.18	3.95	3.13
814	3.98	4.09	3.39	3.87	3.30	3.35	3.02	3.80	3.30	3.59	4.37	4.64
816	11.90*	3.29	11.40*	5.99*	11.60*	7.38*	10.80	0.78	6.77*	7.19*	5.54	3.13
817	*	0.53*	*	0.28*	*	0.44*	*	0.46*	*	0.40*	*	0.30
818	8.55*	5.65*	8.52*	5.36	7.72*	6.32*	10.60	6.91*	7.64*	5.95	11.10*	9.63*
819	2.82	1.88	3.46	2.63	13.30*	2.81	3.24	2.35	3.25	3.06	2.17	2.38
820	2.41	2.79	4.84	4.61	2.83	3.41	3.36	2.20	3.56	2.97	2.50	2.17
821	4.06	3.87	4.46	3.73	4.24	3.57	7.38*	8.45*	6.64*	5.18*	3.47	8.73*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-12. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I M V S I PAGE 287

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 1

RAW DATA FOR ENDOSULFAN SULFATE ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59	14.86	11.59
LABORATORY NUMBER												
801	15.80	13.37	8.79	4.33	14.00	9.68	13.40	12.70	7.79	12.40	14.20	10.16
802	9.26	6.85	10.70	5.10	8.79	6.72	9.38	6.83	9.51	7.27	7.92	5.06
803	11.00	10.00	13.90	9.36	11.60	9.40	11.60	10.10	11.10	9.18	11.20	8.40
804	*	*	*	*	*	*	*	*	*	*	*	*
805	9.10	8.70	8.90	8.30	8.00	5.70	5.10	8.30	9.70	7.10	7.40	8.00
806	24.20*	11.50	18.10	12.50	13.90	11.80	23.30	18.30	16.20	11.40	11.10	10.10
807	8.23*	4.15*	5.04*	5.04*	9.97	5.43	5.65	8.52	7.00*	2.62*	9.80	1.38
808	6.27	6.95	7.05	7.19	7.61*	6.59*	7.20	6.80	6.73	4.12	4.59*	3.60*
809	14.90	10.90	14.50	12.70	15.10	10.90	14.40	11.80	14.20	13.30	12.30	7.90
810	*	*	*	*	*	*	*	*	*	*	*	*
811	47.40*	38.80*	49.60*	25.10*	46.50*	27.70*	49.60*	23.70*	44.00*	22.20*	29.80*	21.40*
812	10.90	6.80	10.50	8.97	8.39	7.85	11.80	10.90	11.60	10.60	6.88	4.25
813	13.90	10.50	14.20	12.10	14.20	11.60	13.90	12.10	12.70	11.50	11.40	9.68
814	14.20	10.50	14.90	8.52	14.60	7.79	13.70	10.50	12.50	7.90	9.72	6.60
816	*	21.00*	29.40*	19.30*	29.40*	16.40*	*	24.20*	*	19.10*	8.63	9.60*
817	3.83*	6.79*	4.66*	5.49*	7.59*	4.14*	4.89*	*	8.43*	5.21*	9.13	.58
818	20.10*	12.90*	24.00	13.60	20.10	13.20	22.80	12.70	22.80*	9.49	19.60*	11.70*
819	11.50	7.72	10.50	7.18	12.20	9.28	13.10	7.88	13.40	6.86	10.90	6.66
820	11.78	9.56	14.40	11.00	11.40	9.20	9.44	2.29	11.30	6.06	6.59	5.34
821	14.80	10.80	13.80	10.40	13.60	10.90	30.20*	18.30*	25.70*	13.70*	6.47	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-12. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR ENDOSULFAN SULFATE ANALYSIS BY WATER TYPE

HIGH YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
TRUE VALUE UG/L	3 29.71	4 23.19	3 29.71	4 23.18	3 29.71	4 23.18	3 29.71	4 23.18	3 29.71	4 23.18	3 29.71	4 23.18
LABORATORY NUMBER												
801	28.60	23.20	3.94*	*	25.70	*	30.50	22.30	22.40	19.10	19.60	10.30
802	16.85	15.84	20.19	14.64	20.85	16.49	23.58	14.14	22.92	14.36	16.37	11.34
803	26.10	16.30	28.00	25.20	24.20	17.40	*	18.00	22.90	17.40	23.20	16.20
804	*	*	*	*	*	*	*	*	*	*	*	*
805	27.00	11.90	29.00	12.60	26.80	8.90	27.00	14.50	16.70	14.10	11.70	7.60
806	32.00	26.10	28.40	24.60	27.80	16.80	39.10	31.00	30.60	0.66	31.30	24.40
807	13.60*	11.00*	19.30*	14.10*	19.40	16.60	14.20	9.18	13.30*	8.27*	8.22	5.27
808	22.80	17.60	20.10	15.30	16.70*	12.40*	19.60	11.24	19.20	15.10	8.10*	8.90*
809	76.80*	69.70*	84.90*	75.90*	81.60*	73.60*	84.50*	73.50*	79.30*	24.80	61.50*	21.10
810	*	*	*	*	*	*	*	*	*	*	*	*
811	22.20	28.70	23.60*	27.90*	30.40*	40.60*	29.40*	31.60*	34.20*	40.90*	37.50*	28.90*
812	13.80	17.50	15.60	15.20	21.30	16.90	24.20	16.50	22.90	11.20	13.70	10.70
813	30.10	36.20	35.50	31.00	30.60	33.60	35.10	34.70	25.90	35.70	26.30	19.70
814	24.60	23.40	25.10	19.50	25.60	19.50	23.70	24.10	22.10	19.30	22.40	16.60
816	39.50	37.90	52.00*	28.30*	52.50*	39.60*	5.13	40.00	53.50*	38.50*	38.90	16.90
817	0.40*	0.74*	*	0.63*	1.34*	0.61*	*	0.41*	0.18*	0.62*	1.41	1.07
818	35.10*	48.30*	35.10	25.40	30.70	27.10	32.00	29.20	34.10	37.40	33.90*	25.80*
819	28.40	19.50	29.90	17.50	29.70	19.50	27.60	21.70	30.90	20.00	18.90	18.00
820	*	19.00	24.60	23.50	26.30	19.10	22.40	15.50	29.60	18.10	18.80	8.30
821	27.10	22.49	27.30	20.80	29.30	22.20	53.90*	45.90*	40.40*	39.10*	19.00	12.50

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-13.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR ENDRIN ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
TRUE VALUE UG/L	2 2.15	5 2.82	2 2.15	5 2.82	2 2.15	5 2.82	2 2.15	5 2.82	2 2.15	5 2.82	2 2.15	5 2.82
LABORATORY NUMBER												
801	1.67	2.94	1.68	2.97	1.50	2.64	2.13	3.45	1.49	2.56	1.20	2.47
802	2.68	4.95	2.74	4.69	2.48	5.32	2.88	5.49	3.10	5.50*	2.25	5.73*
803	1.75	2.60	2.19	3.92	1.95	2.04	1.96	2.79	1.52	2.00	3.20	2.02
804	*	3.65	0.61*	4.03	1.99	2.68	1.95	2.74	0.50	2.82	*	0.84
805	1.20	1.90	1.40	0.51	1.80	3.10	1.90	2.20	1.57	2.20	1.40	1.33
806	0.31	4.05	2.71	2.81	3.29	4.53	1.89	0.30	*	*	0.81	1.71
807	2.09	3.25	2.00	2.86	5.77	3.55	2.10	2.32	2.92	3.90	0.44	0.71
808	1.41	1.65	1.52	1.88	1.31	1.68	1.26*	1.94*	0.64*	0.96*	0.31*	0.38*
809	1.90	2.87	2.14	3.27	2.16	3.07	2.29	3.22	2.12	3.22	1.41	1.52
810	0.84	1.43	*	0.03*	3.47	0.57	3.71	0.73	2.10	3.37	*	1.87
811	18.40*	23.30*	17.30*	21.80*	16.50*	20.40*	17.20*	19.70*	11.90*	19.60*	13.90*	21.70*
812	2.12	2.86	2.14	2.92	2.16	2.92	1.80	3.02	2.26	2.86	1.30	1.40
813	1.80	2.60	1.82	2.15	*	2.30	1.86	2.32	1.80	2.10	1.20	1.98
814	5.60*	7.26*	5.38*	7.32*	*	7.17*	6.31*	8.33*	5.57*	4.33*	4.71*	5.52*
816	1.56	*	2.00	3.34	0.81	2.65	2.31	3.34	1.69	2.68	0.56	0.50
817	1.63	2.20	2.30	1.72	2.08	3.30	1.78	2.03	1.43	2.27	0.94	1.94
818	2.05	3.04	2.16	2.93	2.18	3.28	2.11	2.99	2.00	3.17	1.98	2.67
819	4.31*	4.41*	4.00*	4.21*	4.62	3.59	3.83	3.28	2.93	4.01	3.12*	3.09*
820	0.46*	0.30*	0.44*	0.42*	0.33*	0.34*	0.43*	0.27*	0.39*	0.33*	0.13*	0.10*
821	*	*	*	*	1.42	2.14	2.52	2.91	1.87	2.31	0.29*	0.25*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-13. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 2

RAW DATA FOR ENDRIN ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	6	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	6.46	8.47	6.46	8.47	6.46	8.47	6.46	8.47	6.46	8.47	6.46	8.47
LABORATORY NUMBER												
801	5.66	6.87	5.70	6.98	5.45	6.64	5.18	6.82	6.00	6.42	4.74	5.14
802	11.01	7.45	9.60	6.85	9.48	6.05	8.56	7.49	10.22*	8.49	9.13*	7.01
803	5.60	6.82	6.44	8.20	5.58	6.92	5.34	6.54	4.89	6.00	4.54	5.30
804	6.06	7.26	5.05	7.02	5.88	6.98	6.24	8.10	6.16	7.94	2.38	2.53
805	5.70	6.80	2.70	6.50	5.60	6.50	9.00	4.00	6.30	6.30	3.60	3.60
806	0.90	2.99	4.64	8.39	6.11	3.53	10.00	2.56	*	3.32*	2.92	2.14
807	7.19	9.70	6.23	7.84	8.38	11.00	6.76	6.75	5.00	10.58	1.78	2.15
808	5.96	4.13	4.52	4.86	5.71	3.66	2.78*	4.79*	2.29*	5.50*	1.36*	0.91*
809	7.18	9.79	6.83	9.93	8.24	10.20	6.96	9.53	7.04	8.48	3.20	7.55
810	0.06	9.74	0.04*	0.94*	5.49	3.31	10.30	11.70	4.00	10.80	0.05	0.21
811	27.40*	44.60*	20.50*	43.10*	22.90*	42.90*	20.20*	37.70*	19.40*	37.60*	17.70*	40.70*
812	6.60	8.20	7.14	7.68	6.67	8.52	6.44	9.84	6.36	8.58	3.92	5.02
813	4.65	8.69	4.53	7.95	4.91	7.28	6.38	6.84	4.39	4.24	3.97	6.17
814	15.30*	19.60*	14.50*	16.90*	14.50*	17.30*	10.70	5.92	14.20*	15.80*	9.46*	14.80*
816	6.50	5.62	6.27	5.82	6.10	5.41	6.70	6.24	4.60	5.51	1.90	1.35
817	6.66	8.28	6.37	8.49	6.00	8.23	5.64	7.24	*	7.45	4.56	6.97
818	6.30	8.97	7.70	7.55	7.14	8.41	6.51	9.15	6.63	9.84	5.27	8.93
819	8.20*	13.30*	8.87*	12.32*	8.00	11.00	6.89	12.10	6.72	10.58	7.24*	11.20*
820	0.97*	0.63*	0.93*	0.70*	0.76*	0.73*	0.75*	0.43*	0.80*	0.65*	0.20*	0.18*
821	*	*	*	*	5.23	6.94	5.51	7.07	6.05	7.54	0.80*	0.89*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-13. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 2

RAW DATA FOR ENDRIN ANALYSIS BY WATER TYPE

HIGH YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59	17.22	22.59
LABORATORY NUMBER												
801												
802	13.40	19.90	13.30	17.40	12.80	19.40	12.50	20.80	13.30	19.10	9.80	17.20
803	23.50*	27.07	23.67	22.19	24.06	26.61	22.72	27.86	24.71	29.69	15.80	27.11
804	12.70	18.20	15.00	18.60	12.60	16.20	15.60	18.30	15.90	18.69	13.73	16.90
805	13.10	18.40	8.89	20.60	16.30	19.00	15.40	20.90	16.40	20.40	12.00	11.70
806	10.50	19.80	9.40	25.30	9.20	19.50	12.60	21.60	1.50	20.20	10.50	21.70
807	18.20	19.60	20.30	21.00	20.60	8.91	14.10	16.50	*	*	6.69	7.02
808	11.80	14.30	13.90	15.40	15.80	25.80	17.94	20.72	12.50	17.00	3.92	5.50
809	11.65	13.77	12.19	12.55	11.32	11.46	9.00*	11.16*	5.41*	4.46*	3.16*	3.26*
810	15.50	30.60	17.70	33.10*	16.70	35.20	17.00	36.80	16.50	36.40	11.50	10.40
811	0.14*	2.01*	2.24*	2.36*	0.10	33.20	24.40	25.20	18.70	27.40	11.10	3.53
812	51.20*	40.80*	46.70*	38.00*	47.60*	35.60*	44.70*	35.20*	48.40*	35.10*	34.80*	32.90*
813	17.00	21.80	17.70	22.60	17.70	22.90	17.40	23.60	16.50	21.40	12.90	12.30
814	*	20.60	13.50	19.80	14.40	12.40	14.20	20.30	14.60	17.30	8.40	12.40
816	38.10*	46.80*	45.60*	49.30*	34.00*	38.90*	45.10*	49.20	42.10*	45.30*	29.00*	38.60*
817	16.60	21.00	11.40	21.60	14.50	21.50	14.20	22.00	11.80	17.70	1.15	3.37
818	14.97	20.76	14.27	20.57	13.36	22.14	15.04	12.44	11.19	23.60	13.66	12.66
819	14.50	19.50	14.10	19.60	16.30	19.60	13.50	16.50	13.60	18.10	15.80	19.80
820	27.91*	43.01*	30.91*	44.63*	31.46	42.38	30.85*	40.97	26.46	38.64	28.03*	39.95*
821	2.60*	1.84*	1.84*	1.82*	2.96*	3.51*	2.84*	2.09*	2.70*	2.17*	0.35*	0.46*
	*	*	*	*	13.10	15.70	13.60	1.86	15.70	17.90	2.64*	2.88*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-14.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR HEPTACHLOR ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	2	5	2	5	2	5	2	5	2	5	2	5
TRUE VALUE UG/L	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54	0.45	0.54
LABORATORY NUMBER												
801	0.29	0.39	0.28	0.34	0.28	0.41	0.27	0.53	0.24	0.42	0.18	0.06
802	0.43	0.41	0.36	0.12	0.35	0.40	0.34	0.42	0.32	0.42	0.11	0.03
803	0.36	0.47	0.40	0.50	0.40	0.43	0.35	0.37	0.31	0.40	0.30	0.16
804	*	0.47	0.07	0.39	0.30	0.42	0.21	0.39	0.20	0.32	*	0.09
805	0.22	0.05	0.32	0.18	0.31	0.11	0.32	0.19	0.22	0.09	0.05	0.07
806	1.43*	0.74*	0.13	0.58	0.69*	0.88	0.71	0.16	*	*	0.38	0.03
807	0.57*	2.01*	0.49	0.56	5.60*	0.73	0.63	2.15*	1.09	0.67	0.26	*
808	0.25*	0.32*	0.29	0.32	0.23*	0.22*	0.25	0.23	0.17*	0.21*	0.03	0.04
809	0.27	0.49	0.30	0.52	0.36	0.42	0.31	0.35	0.27	0.45	0.19	0.11
810	0.22	0.31	0.26	0.25	0.36	0.24	0.11	0.38	0.18	0.15	*	0.11
811	3.17*	5.13*	3.37*	4.16*	3.22*	4.95*	4.32*	3.98*	3.26*	4.97*	3.21*	3.20*
812	0.32	0.42	0.33	0.42	0.40	0.51	0.38	0.38	0.27	0.35	0.03	0.09
813	0.51	0.58	0.35	0.52	0.45	0.46	0.47	0.56	0.41	0.44	0.20	0.37*
814	0.37	0.44	0.50	0.54	*	0.57	0.85*	0.98*	1.04	0.43	*	*
816	0.06*	*	0.09	0.07	0.23	0.33	0.05	0.22	0.04	0.08	0.01*	0.04*
817	0.40	0.24	0.58	0.34	0.40	0.25	0.41	0.27	0.45	0.27	*	*
818	0.39	0.57	0.38	0.50	0.45	0.47	0.42	0.41	0.38	0.39	0.37*	0.38*
819	0.89*	0.94*	0.75*	0.90*	1.10*	0.79*	0.94*	0.87*	0.62*	1.03*	*	*
820	0.08	0.85	0.03*	0.07*	0.03*	0.03*	0.02*	0.01*	0.02*	0.03*	0.03	0.25*
821	0.27	0.41	0.49	0.47	0.19	0.33	0.38	0.47	0.16	0.19	0.06	0.05

* = REJECTED

WATER LEGEND

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TABLE A-14. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR HEPTACHLOR ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	5	4	6	4	6	4	6	4	5
TRUE VALUE UG/L	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07	0.89	1.07
LABORATORY NUMBER												
801	0.55	0.69	0.39	0.62	0.52	0.59	0.54	0.70	0.30	0.33	0.17	0.05
802	0.91	0.75	0.74	0.58	0.80	0.74	0.73	0.68	0.75	0.75	0.31	0.10
803	0.70	0.76	0.48	0.92	0.66	1.36	0.62	0.82	0.64	0.78	0.52	0.34
804	0.72	0.51	0.52	0.80	0.54	0.80	0.68	0.77	1.03	0.31	0.18	0.40
805	0.54	1.04	0.51	0.61	0.81	0.69	0.51	0.56	0.99	0.59	0.09	0.07
806	1.69*	1.35*	0.88	1.05	0.92	0.73	0.31	0.26	*	1.32*	0.71	0.72
807	6.13*	2.64*	1.52*	1.06	2.08*	1.67	1.57*	4.13*	0.46	0.60	*	*
808	0.47*	0.48*	0.51	0.62	0.42*	0.52*	0.28	0.45	0.25*	0.28*	0.09	0.08
809	0.69	0.90	0.96	1.08	0.81	0.89	0.55	0.81	0.64	0.86	0.07	0.37
810	0.48	0.80	0.54	0.71	0.45	0.69	0.24	0.23	0.26	0.32	*	0.24
811	0.90*	6.06*	0.58*	5.83*	0.77*	5.83*	0.61*	5.76*	0.55*	4.99*	0.40*	4.76*
812	0.68	0.82	0.69	0.76	0.86	0.89	0.77	1.01	0.58	0.75	0.05	0.16
813	0.63	1.09	0.68	1.00	0.51	1.03	0.74	1.00	0.74	0.56	0.65	1.73*
814	0.87	1.04	0.89	1.27	1.05	1.14	1.14*	1.40*	1.07	1.26	*	*
816	0.58*	0.19*	0.67	0.09	0.46	0.05	0.76	0.29	0.60	0.29	0.13*	0.03*
817	0.67	0.81	0.79	0.71	0.67	0.88	0.66	0.67	*	0.61	0.36	0.43
818	0.95	1.16	1.18	1.05	1.17	0.93	1.12	0.98	1.17	1.02	0.93*	0.90*
819	1.00*	2.05*	0.90*	1.99*	0.79*	1.80*	0.86*	2.17*	1.18*	1.85*	*	*
820	0.21	0.23	0.14*	0.17*	0.27*	0.02*	0.01*	0.01*	0.05*	0.05*	0.55	0.07
821	0.61	0.80	0.77	1.13	0.49	0.67	0.78	0.96	0.30	0.42	0.03	0.03

* = REJECTED

WATER LEGEND

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2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-14. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

RAW DATA FOR HEPTACHLOR ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	1	3	1	3	1	3	1	3	1	3	1	3
TRUE VALUE UG/L	2.68	3.22	2.69	3.22	2.68	3.22	2.68	3.22	2.69	3.22	2.69	3.22
LABORATORY NUMBER												
801	1.60	2.02	1.47	2.13	1.61	2.13	1.61	2.33	1.36	1.95	0.55	0.63
802	1.93	2.80	1.95	2.54	2.15	2.71	2.12	2.79	2.15	2.57	0.95	1.25
803	2.15	2.50	2.35	3.00	2.05	2.70	3.81*	2.66	2.00	2.25	1.80	1.30
804	1.76	2.05	0.94	1.85	1.61	2.16	1.79	2.30	1.92	1.58	2.10	1.43
805	1.46	1.90	1.64	2.78	1.85	2.60	1.62	2.79	1.25	1.50	0.22	1.60
806	4.56*	4.12*	3.52	3.26	4.14*	2.73	2.37	2.76	*	*	0.38	3.48*
807	5.14*	2.87*	2.89	4.92*	0.89	6.32*	1.87	2.55	3.07	1.64	0.58	0.08
808	1.38*	1.69*	1.17	1.60	1.37*	1.52*	1.41	1.32	0.47*	0.74*	0.30	0.35
809	1.75	2.18	2.15	2.62	2.07	2.43	1.98	2.18	1.80	2.13	1.41	0.28
810	1.90	1.93	2.23	2.46	1.68	2.78	1.70	0.83	0.94	1.24	*	*
811	7.85*	19.30*	7.69*	17.90*	7.79*	18.20*	7.46*	18.30*	10.80*	17.70*	7.61*	16.00*
812	2.06	2.34	1.77	2.52	2.20	2.64	2.06	2.66	1.19	1.82	0.14	0.40
813	1.94	1.73	2.05	2.49	2.50	2.04	2.12	2.22	2.06	1.68	2.90	1.24
814	2.03	2.70	2.26	2.69	2.77	3.16	3.11*	3.33*	2.99	3.14	*	*
816	1.28*	1.90*	1.64	1.81	1.76	2.45	1.71	1.77	0.73	1.53	0.10*	0.19*
817	1.19	2.79	1.18	1.23	1.31	2.56	1.06	2.84	0.67	2.72	*	1.46
818	2.08	2.61	2.09	2.66	2.22	2.09	2.15	2.19	2.18	2.43	1.88*	1.88*
819	4.90*	6.92*	5.21*	6.04*	3.99*	6.53*	5.45*	6.00*	4.22*	6.32*	*	*
820	0.59*	0.66*	0.32*	0.48*	0.16*	0.07*	0.05*	0.07*	0.07*	0.11*	0.08	0.18
821	1.34	1.84	3.27	2.81	1.50	2.01	1.77	2.42	1.05	1.08	0.17	0.18

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
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4 - WASTE WATER 1
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TABLE A-15.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR HEPTACHLOR EPOXIDE ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	2	6	2	6	2	6	2	6	2	6	2	6
TRUE VALUE UG/L	1.10	0.87	1.10	0.97	1.10	0.87	1.10	0.87	1.10	0.87	1.10	0.87
LABORATORY NUMBER												
801	0.98	0.84	1.00	0.91	0.95	0.82	1.15	0.94	0.77	1.07	0.33	0.36
802	0.85	0.73	0.76	0.75	0.70	0.74	0.79	0.74	0.75	0.77	0.50	*
803	0.94	0.80	0.99	0.90	0.81	0.60	*	0.82	0.99	0.60	0.80	0.58
804	2.14*	0.67	0.85	0.80	0.78*	0.45*	0.94	0.64	0.39*	0.45*	0.27	0.36
805	0.76*	0.42*	0.89	2.50*	0.85*	0.58*	0.80*	0.21*	0.79*	0.30*	0.30	0.12
806	1.08	0.93	1.14	0.93	1.13	0.63	0.89	1.14	1.02	0.84	1.07	0.55
807	1.25	1.03	0.31	0.82	1.40*	1.62*	1.80*	0.71	1.52	0.70	0.31	1.11
808	0.52*	0.44*	0.50*	0.32*	0.39*	0.42*	0.50*	0.30*	0.33*	0.37*	0.21	0.53
809	1.23	0.96	1.71	0.97	1.39	1.04	1.28	0.94	1.32	1.05	0.64	0.36
810	1.38	0.94	1.49*	0.94*	1.27	1.07	0.84	0.84	1.03	0.77	0.59	0.23
811	9.72*	7.12*	8.05*	6.76*	8.19*	6.83*	7.32*	5.77*	8.54*	5.77*	7.26*	4.87*
812	0.80	0.61	0.97	0.80	0.87	0.64	0.92	0.87	1.09	0.86	0.81	0.45
813	1.17	0.93	1.05	0.89	1.14	0.88	1.15	0.73	1.10	0.80	0.68	0.59
814	1.19	0.99	0.96	0.97	1.14	0.92	0.99	0.82	1.02	0.90	*	*
816	1.26	0.29*	1.09	0.65	1.14	0.69	1.16	0.85	0.55	0.67	0.15*	0.25*
817	1.11	0.78	1.01	0.73	1.08	0.82	1.13	0.73	1.22	0.81	1.24*	0.65*
818	1.13	1.04	1.13	0.93	1.14	1.07	1.17	1.01	0.96	0.92	0.89	1.01
819	1.16	0.95	0.95	1.22*	0.87	1.13	0.65	0.91	0.93	1.30	*	*
820	0.96	0.61	0.92	0.77	0.77	0.68	1.04	0.87	0.94	0.67	0.35	0.21
821	1.30	1.08	1.24	0.73	1.19	0.94	1.10	0.86	0.93	0.95	0.55	0.30

* = REJECTED

WATER LEGEND

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TABLE A-15. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR HEPTACHLOR EPOXIDE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49	4.42	3.49
LABORATORY NUMBER												
801	4.30	3.28	4.45	1.17	4.03	2.73	4.18	3.16	3.05	2.97	1.81	3.01
802	2.71	2.59	3.29	3.11	3.04	2.26	3.11	2.05	3.01	3.42	2.35	1.50
803	3.40	3.05	3.39	2.59	3.40	2.64	3.56	2.76	3.30	3.00	3.30	2.26
804	0.92*	2.56	3.70	2.65	2.35*	2.56*	2.65	2.35	1.80*	2.64*	1.84	1.24
805	2.20*	2.10*	1.90	2.10	1.90*	1.20*	1.20*	2.30*	2.60*	1.60*	1.83	2.20
806	5.25	3.56	4.05	3.90	4.76	4.02	7.06*	4.07	5.15	3.60	2.59	3.22
807	5.80	3.59	4.79	3.96	5.15*	4.36*	3.81	6.54*	3.96	3.22	3.01	0.90
808	1.99*	1.71*	1.94*	1.91*	1.60*	1.32*	2.37*	1.48*	1.48*	1.19*	1.68	1.06
809	4.00	3.72	4.02	4.39	4.44	4.32	3.96	3.68	3.54	3.38	1.94	2.08
810	4.85	3.85	5.19*	4.41*	4.43	3.84	2.79	3.83	5.12	3.22	3.02	1.66
811	16.00*	16.60*	14.20*	15.10*	14.90*	15.10*	14.60*	15.10*	16.90*	16.30*	12.90*	16.20*
812	3.54	3.27	3.27	2.90	4.24	3.58	3.54	3.25	3.97	3.60	2.35	1.58
813	3.96	2.56	4.15	2.90	3.84	2.86	4.00	2.69	3.92	2.74	2.72	2.29
814	4.03	3.02	3.98	3.02	2.41	3.10	3.83	2.86	3.98	2.82	*	*
816	3.50	2.68	2.64	2.11	3.41	1.89	0.95*	2.64	2.68	2.24	1.05*	0.48*
817	3.27	3.63	3.32	3.86	3.17	3.81	3.11	*	3.13	4.05	3.58*	2.74*
818	4.28	3.10	4.29	2.99	4.26	3.04	4.35	2.91	4.21	3.44	3.99	3.10
819	3.67	1.68	3.24	2.00	3.50	2.83	2.99	3.03	3.60	3.50	*	*
820	*	2.13	3.61	2.38	3.14	2.71	3.23	2.55	3.71	4.38	1.02	1.20
821	3.95	3.35	4.41	3.48	2.92	2.22	4.39	3.43	4.22	3.09	1.55	*

* = REJECTED

WATER LEGEND

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TABLE A-15. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

RAW DATA FOR HEPTACHLOR EPOXIDE ANALYSIS BY WATER TYPE

HIGH YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	3	4	3	4	3	4	3	4	3	4	3	4
TRUE VALUE UG/L	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23	6.62	5.23
LABORATORY NUMBER												
801	6.05	4.76	6.79	*	5.78	*	6.48	5.07	4.53	3.72	2.23	2.64
802	4.34	4.91	4.39	4.91	5.13	4.47	3.43	4.26	3.73	4.60	2.81	2.69
803	5.75	4.10	5.49	4.49	5.40	4.10	*	4.34	5.50	4.00	4.50	3.75
804	1.73	3.41	4.31	2.73	4.36*	2.63*	4.57	3.94	1.60*	1.60*	1.90	1.25
805	5.10*	2.20*	5.60	2.10	4.00*	2.30*	5.20*	1.90*	2.80*	2.90*	1.90	1.60
806	7.27	5.99	6.79	6.24	6.97	4.64	8.38	5.01	7.06	5.55	6.17	4.21
807	7.11	5.65	7.08	5.84	6.24*	6.43*	13.00*	5.03	7.13	5.33	3.93	2.96
808	3.67*	2.70*	4.49*	3.01*	3.20*	3.33*	3.13*	2.26*	2.27*	1.95*	1.99	2.00
809	5.87	4.83	6.33	4.66	6.72	4.88	5.59	4.68	4.97	4.04	3.60	2.65
810	7.53	6.96	7.09*	5.20*	8.07	5.14	6.07	4.43	8.82	4.97	3.49	3.63
811	20.80*	20.20*	20.30*	17.80*	19.80*	18.20*	18.20*	15.20*	20.80*	14.60*	19.40*	15.00*
812	6.51	5.60	5.59	4.23	6.42	4.96	7.73	4.51	6.50	4.56	3.59	3.10
813	8.16	7.64	8.58	9.04*	7.40	8.73*	7.31	8.55*	7.04	9.08*	6.22	4.66
814	6.06	5.17	5.69	4.81	5.90	4.51	39.00*	4.63	5.77	5.11	*	*
816	2.22	4.45	5.14	4.26	4.84	2.18	5.01	3.24	4.51	1.44*	2.17*	1.17*
817	7.74	5.44	3.33*	*	6.02	4.88	6.25	5.10	8.21	5.06	6.75*	4.91*
818	6.95	4.33	6.94	4.18	7.17	3.94	6.94	4.13	6.39	4.00	5.39	2.51
819	5.48	4.14	4.98	3.79	5.84	3.70	4.12	3.03	4.02	3.82	*	*
820	4.88	3.81	5.70	3.89	5.42	1.87	5.32	3.65	5.22	3.31	2.73	1.43
821	5.86	5.04	6.12	4.91	5.92	4.87	6.27	5.17	5.13	4.98	3.08	2.48

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-16.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 3

RAW DATA FOR CHLORDANE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	3	6	3	6	3	6	3	6	3	6	3	6
TRUE VALUE UG/L	10.59	8.49	10.59	8.49 *	10.59	8.49	10.59	8.49	10.59	8.49	10.59	8.49
LABORATORY NUMBER												
801	8.64	8.02	10.50	8.18	9.71	9.16	12.40	8.15	9.16	7.66	7.13	5.40
802	8.67	6.73	8.98	7.33	8.59	7.15	8.52	6.94	7.83	6.90	3.72	6.59
803	7.72	6.17	1.77	5.30	6.93	5.60	7.14	5.94	6.79	5.59	6.34	5.04
804	7.24	6.04	7.34	5.82	7.34	6.10	6.21	5.84	9.14	*	2.12	2.52
805	5.70	7.16	7.95	7.23	8.60	6.80	9.75	5.51	13.70*	5.82	5.21	3.22
806	9.90	9.34	9.28	1.55	4.25	4.08	8.80	4.89	4.30*	4.73	6.25	1.79
807	10.80	8.34	11.10	6.74	6.42	8.44	6.25	5.24	2.94*	2.74*	0.70*	0.51*
808	5.68*	3.84*	5.81	4.43	5.36*	3.71*	2.97*	3.18*	2.78*	2.99*	2.60	1.84
809	9.80	8.20	8.94	8.27	11.20	8.64	13.40	8.50	9.60	9.11	4.95	3.89
810	6.41	*	9.24	5.67	8.97	7.25	10.00	8.92	8.36	5.89	4.65	4.59
811	12.80	8.40	11.40	6.50	9.40	5.40	6.60	7.60	8.70	7.69	9.20	6.84
812	7.98	6.70	8.56	6.56	8.10	6.66	7.38	6.96	6.92	5.66	5.80	2.30
813	9.03	5.10	8.24	5.09	6.27	5.40	8.56	4.99	8.11	4.32	1.61	1.70
814	44.60*	37.90*	41.40*	33.00*	39.20*	32.30*	46.10*	31.40*	47.20*	464.00*	235.00*	24.30*
816	9.24	5.12	7.20	4.91	8.64	5.03	7.88	5.20	6.78	5.32	2.80	1.56
817	7.91	4.12	7.84	4.18	7.88	5.51	7.97	4.95	8.80	6.17	7.08	4.07
818	9.06	7.05	9.03	7.04	8.77	6.88	8.88	6.74	8.75	7.25	7.90*	7.04*
819	15.69*	17.51*	16.50	14.98*	19.34*	14.02*	18.61*	17.10*	13.11*	15.19*	16.27*	9.11*
820	9.61	5.50	5.36	5.07	6.20	5.37	8.81	3.97	8.55	5.16	*	0.15*
821	*	*	*	*	*	*	*	*	*	*	*	*

* = REJECTED

WATER LEGEND
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1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-16. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 3

RAW DATA FOR CHLORDANE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	2	5	2	5	2	5	2	5	2	5	2
TRUE VALUE UG/L	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95	42.37	33.95
LABORATORY NUMBER												
801	45.00	39.20	39.90	40.00	39.90	40.10	40.30	45.20	33.10	37.30	25.90	29.30
802	32.60	27.80	32.94	29.41	33.86	27.77	34.04	27.55	31.87	27.04	20.84	15.96
803	35.10	30.70	28.70	26.50	28.30	19.60	28.50	22.10	28.70	18.90	26.60	24.80
804	30.50	25.10	31.50	27.20	33.10	24.50	30.80	25.10	44.10	32.80	15.40	*
805	28.40	24.40	35.80	24.90	29.00	23.40	27.00	24.60	25.50	22.00	24.20	16.10
806	33.20	18.40	9.47	17.10	34.20	14.90	17.30	19.20	22.70	21.30	10.60	14.30
807	36.60	29.90	31.40	26.20	36.50	28.20	27.60	27.00	22.20*	13.50*	4.44*	4.81*
808	26.75*	21.60*	29.06	21.70	26.01*	20.48*	17.11*	13.02*	16.57*	11.78*	6.84	3.12
809	32.50	30.20	38.00	31.00	38.30	34.90	43.70	32.90	36.90	29.50	11.40	9.09
810	*	30.30	32.80	30.50	35.40	29.30	40.00	31.60	32.20	27.80	23.20	17.20
811	2.90*	28.20	2.77	24.60	2.50*	22.40	2.50	17.90	2.70*	14.80	1.90	18.60
812	32.80	26.60	32.00	28.80	32.40	26.00	34.20	26.20	28.80	24.20	13.40	14.50
813	51.30	32.90	48.50	32.70	50.10*	32.50	49.00	33.70	48.70	30.90	17.00	18.30
814	80.50*	55.00*	48.80*	55.90*	77.00*	54.50*	108.00*	59.90	89.10*	58.40*	*	48.70*
816	30.70	19.10	31.80	20.70	31.20	23.70	32.50	21.80	31.30	19.20	13.60	6.85
817	41.39	28.04	31.91	33.35	30.96	32.54	31.00	29.63	31.41	26.97	18.84	22.62
818	36.80	25.80	35.20	27.20	37.40	26.30	37.40	27.20	36.30	24.70	28.30*	24.10*
819	69.43*	48.54*	47.85	44.63	70.39*	43.52*	58.91	60.52	41.61*	62.04*	81.08*	50.95*
820	24.30	29.50	22.80	20.50	39.50	23.50	30.30	19.00	22.60	19.00	0.22*	0.24*
821	*	*	*	*	*	*	*	*	*	*	*	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-16. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 3

RAW DATA FOR CHLORDANE ANALYSIS BY WATER TYPE

HIGH YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	1	4	1	4	1	4	1	4	1	4	1	4
TRUE VALUE UG/L	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44	52.96	42.44
LABORATORY NUMBER												
801	51.60	50.90*	38.30	39.90	43.90	31.90	41.00	39.50	34.60	35.10	25.20	25.60
802	34.92	36.04	38.46	33.66	37.43	34.54	30.56	30.73	36.13	31.82	31.20	25.23
803	41.70	35.70	35.40	31.90	37.80	30.90	40.30	29.00	34.20	28.90	36.60	11.85
804	30.20	32.40	28.80	29.70	37.10	28.30	35.30	27.50	49.80	43.30	*	14.80
805	46.20	38.90	49.10	41.30	38.00	38.70	38.70	41.60	38.90	32.70	19.80	23.60
806	37.70	31.20	25.00	38.00	39.60	25.70	32.90	22.90	30.30	20.60	21.40	12.30
807	43.20	38.00	46.60	38.90	44.00	34.00	28.70	29.80	24.40*	18.10*	6.23*	2.92*
808	34.89*	26.65*	34.04	23.52	34.83*	24.91*	24.31*	21.18*	20.14*	23.81*	4.20	9.84
809	41.50	33.30	49.20	35.50	49.30	38.40	49.00	35.80	43.50	31.30	13.40	15.20
810	48.50	37.80	47.20	35.40	47.20	42.30	53.70	40.30	47.80	35.60	29.80	18.20
811	21.10	27.90	18.70	19.40	19.70	22.40	15.30	19.50	14.80	18.20	16.70	19.60
812	40.60	34.40	45.40	37.00	39.80	33.00	41.60	32.80	35.80	29.60	25.80	11.80
813	64.50	44.90	65.60	45.20	63.00	46.10	64.30	46.50	60.50	42.30	40.70	12.90
814	64.40*	85.30*	101.00*	77.80*	67.60*	74.50*	19.10	71.30	102.00*	72.30*	3.50	154.00*
816	22.50	33.50	19.40	30.50	32.40	33.90	27.70	31.20	27.50	27.00	15.70	11.70
817	45.85	38.19	45.13	34.36	52.64	43.94	43.69	35.58	44.54	36.05	31.70	23.28
818	45.60	36.50	45.60	34.20	44.80	35.50	43.80	36.40	42.00	34.50	39.70*	30.60*
819	41.68*	70.67*	36.18	70.59*	42.84*	58.29*	32.46	63.35	42.52*	66.81*	*	64.03*
820	47.60	34.80	40.70	22.60	47.80	39.30	46.00	20.70	45.40	15.00	0.77*	0.24*
821	*	*	*	*	*	*	*	*	*	*	*	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-17.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 4

RAW DATA FOR TOXAPHENE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	6	2	6	2	6	2	6	2	6	2	6	2
TRUE VALUE UG/L	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05	57.52	47.05
LABORATORY NUMBER												
801	64.40	50.10	56.70	66.50	55.30*	51.90*	53.30*	46.10*	59.80	51.70	37.60*	30.70*
802	44.40	34.70	47.70	37.20	44.90	37.80	43.80	35.50	41.60	34.50	33.60	5.86
803	46.70	52.00	55.00	45.70	46.30	41.10	51.00	55.50	54.30*	44.70*	52.00*	40.00*
804	*	32.50	46.30	25.10	43.90	19.20	48.80	37.00	40.70	35.00	13.10	8.75
805	49.30	31.10	41.60	33.60	40.60	33.00	41.60	33.00	38.00	37.50	37.20	37.30
806	96.10*	82.00*	99.90*	88.90*	51.60	50.30	53.40*	47.80*	80.90	78.30	37.20	32.50
807	29.80	33.80	30.60	52.20	31.60	34.60	69.10	59.50	26.50	30.30	47.30	26.00
808	57.87*	73.18*	40.97	61.15	42.26	57.34	36.62	33.42	16.05	8.65	6.55*	10.37*
809	42.80	44.40	47.30	46.70	52.30	46.90	47.80	45.90	47.60	39.20	20.40	18.90
810	60.30	34.10	49.30	27.50	63.50	29.20	22.30	24.10	45.90	30.00	18.80	11.50
811	33.00*	25.00*	36.00*	18.00*	24.20*	15.50*	18.20*	13.20*	15.00*	25.30*	16.00	25.40
812	48.00	41.20	47.00	40.60	54.20	40.20	48.60	35.80	45.20	35.40	19.20	17.90
813	42.40	25.20	40.10	27.30	43.90	26.80	40.80	28.00	39.00	28.60	18.80	10.10
814	40.20	50.10	45.30	50.70	50.20	54.20	37.60	36.60	42.00	76.10	23.70	44.40
816	51.60	39.80	48.60	37.20	47.50	41.90	48.30	34.30	34.20	38.50	5.05*	9.60*
817	35.72	37.00	39.23	36.20	38.63	33.79	41.04	32.19	35.31	*	23.06	29.16
818	62.30	51.20	62.40	56.10	57.60	56.50	59.70	54.80	60.20	49.40	52.50*	61.20*
819	33.90*	19.39*	33.65*	19.59*	28.66*	21.01*	25.25*	9.63*	28.14*	14.26*	27.23	24.64
820	50.60	5.09*	37.40	26.50	34.90	24.20	32.80	25.00	27.60	19.00	7.19*	5.23*
821	51.90	40.90	51.50	44.60	51.30	42.00	50.90	36.80	42.50	39.50	5.32*	4.34*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-17. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 4

RAW DATA FOR TOXAPHENE ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	4	3	4	3	4	3	4	3	4	3	4	3
TRUE VALUE UG/L	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14	172.56	141.14
LABORATORY NUMBER												
801	154.00	146.00	165.70	142.00	165.00*	130.00*	175.00*	141.00*	139.00	132.00	116.00*	98.00*
802	136.00	110.00	148.00	113.00	140.00	115.00	131.00	119.00	47.50	114.00	87.90	92.00
803	162.00	139.00	162.00	159.00	163.00	*	158.00	128.00	191.00*	148.00*	152.00*	116.00*
804	126.00	121.00	154.00	115.00	111.00	84.30	165.00	118.00	123.00	28.80*	36.00	38.50
805	143.00	129.00	150.00	110.00	158.00	131.00	169.00	147.00	190.00	130.00	79.50	109.00
806	292.40*	244.80*	289.90*	239.40*	141.50	131.90	272.20*	219.30*	126.50	113.40	89.80	85.80
807	95.00	85.20	89.90	75.60	90.80	77.20	159.60	130.20	94.60	90.40	161.90	83.10
808	236.93*	165.99*	229.70	155.63	270.32	130.68	116.74	110.37	130.11	133.95	22.13*	12.75*
809	143.00	102.00	158.00	111.00	164.00	109.00	147.00	100.00	148.00	101.00	73.20	61.50
810	109.00	81.40	21.60*	251.00*	73.40	113.00	68.90	95.00	117.00	102.00	32.10	19.30
811	47.10*	51.00*	47.80*	47.00*	44.40*	49.40*	49.70*	44.20*	63.70*	47.40*	58.70	56.00
812	149.00	128.00	159.00	132.00	155.00	125.00	159.00	127.00	143.00	118.00	68.40	61.20
813	109.00	79.80	116.00	84.70	109.00	79.80	111.00	74.10	97.50	73.90	47.90	41.20
814	148.00	88.10	174.00	98.30	157.00	124.00	52.70	92.90	111.00	94.40	42.50	49.00
816	147.00	106.00	148.00	140.00	158.00	108.00	154.00	132.00	118.00	82.10	14.90*	20.60*
817	157.16	107.27	141.55	113.37	151.27	111.69	149.02	118.63	151.79	115.40	116.03	88.74
818	149.00	129.00	169.00	139.00	163.00	136.00	164.00	121.00	158.00	148.00	162.00*	130.00*
819	91.71*	69.99*	87.22*	51.36*	87.18*	68.14*	52.51*	50.77*	70.12*	55.60*	81.49	58.66
820	79.90	81.60	87.50	84.80	88.60	69.50	166.00	75.00	91.20	80.70	9.17*	4.36*
821	171.00	136.00	191.00	131.00	229.00	128.00	238.00	196.00*	170.00	108.00	16.80*	9.85*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-17. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 4

RAW DATA FOR TOXAPHENE ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	5	1	5	1	5	1	5	1	5	1	5	1
TRUE VALUE UG/L	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34	402.64	329.34
LABORATORY NUMBER												
801	417.00	337.00	370.00	361.00	403.00*	341.00*	390.00*	346.00*	382.00	306.00	367.00*	255.00*
802	332.00	274.00	319.00	281.00	332.00	238.00	343.00	274.00	337.00	238.00	221.00	168.00
803	427.00	351.00	437.00	303.00	*	293.00	399.00	215.30	379.00*	370.00*	283.00*	273.00*
804	298.00	280.00	404.00	213.00	238.00	231.00	325.00	284.00	163.00	97.20	0.00*	83.40
805	305.00	299.00	374.00	228.00	436.00	254.00	394.00	306.00	298.00	258.00	228.00	235.00
806	381.90*	291.20*	344.90*	386.90*	303.10	295.40	361.30*	523.70*	327.00	314.60	227.50	206.70
807	156.90	151.90	175.50	167.40	202.90	167.20	288.20	178.60	155.30	169.10	96.90	70.10
808	392.74*	398.19*	388.96	384.61	376.75	373.31	304.60	308.51	320.59	334.14	13.62*	47.91*
809	435.00	266.00	424.00	296.00	154.00	325.00	380.00	234.00	327.00	330.00	45.20	192.00
810	395.00	260.00	343.00	275.00	275.00	239.00	189.00	173.00	241.00	236.00	96.20	57.60
811	49.30*	138.00*	98.60*	94.00*	98.00*	101.00*	91.10*	65.00*	75.80*	63.00*	75.80	94.00
812	365.00	278.00	391.00	258.00	345.00	244.00	359.00	304.00	322.00	270.00	167.00	163.00
813	303.00	243.00	304.00	236.00	309.00	243.00	269.00	221.00	263.00	215.00	169.00	129.00
814	289.00	213.00	273.00	233.00	181.00	210.00	279.00	189.00	217.00	223.00	177.00	139.00
816	311.00	286.00	338.00	270.00	347.00	294.00	340.00	286.00	251.00	190.00	38.50*	19.20*
817	311.07	288.36	334.84	300.48	345.50	314.24	386.48	289.50	381.56	91.47	329.42	239.35
818	395.00	283.00	372.00	261.00	391.00	271.00	378.00	261.00	331.00	273.00	330.00*	254.00*
819	139.49*	154.47*	213.73*	166.81*	176.56*	174.47*	115.76*	154.30*	174.75*	136.26*	123.59	124.11
820	253.00	219.00	222.00	202.00	255.00	201.00	249.00	110.00	209.00	205.00	26.90*	67.80*
821	327.00	321.00	365.00	334.00	361.00	304.00	379.00	324.00	318.00	273.00	28.60*	30.70*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-18.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 8

RAW DATA FOR AROCLOR 1016 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	2	1	2	1	2	1	2	1	2	1	2	1
TRUE VALUE UG/L	10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86	10.25	13.86
LABORATORY NUMBER												
801	9.64	14.10	7.44	11.20	9.81	8.13	13.50	10.40	9.41	26.90*	*	*
802	8.86	11.13	8.29	11.20	7.25	11.50	6.28	10.20	7.36	10.20	7.45	8.66
803	8.70	11.00	*	11.50	8.25	11.70	5.68	10.30	7.35	10.70	8.00	10.80
804	7.78	10.70	7.09	9.55	*	9.97	7.60	9.46	8.05	13.50	5.62	10.20
805	5.07	10.80	5.27	11.90	4.87	10.60	5.34	8.90	5.12	6.80	3.70	6.11
806	176.00*	262.00*	186.00*	247.00*	109.00*	139.00*	258.00*	70.20*	97.20*	136.00*	55.90*	90.30*
807	8.77	18.40	10.30	14.10	13.00	19.10*	11.30	14.30	8.47	8.62	3.00	4.06
808	8.02*	10.44*	7.26*	10.04*	8.62*	9.90*	4.97*	7.98*	2.81*	6.06*	1.89	2.84
809	4.63	8.21	8.13	10.50	8.67	10.90	6.93	13.10	8.98	10.30	7.35	11.40
810	10.20	13.50	17.50*	14.90	20.20*	15.90	14.80	15.50	12.80	13.00	11.30	8.33
811	5.50*	6.30*	5.80*	5.70*	5.10*	5.20*	4.80*	4.90*	6.10*	5.70*	3.90	4.60
812	8.53	11.30	9.44	12.30	7.85	11.00	9.32	11.70	11.00	12.40	4.09	5.65
813	9.69	11.70	9.02	9.29	12.50	9.63	8.60	10.40	10.10	10.60	7.94	6.94
814	16.80*	21.00*	14.60*	24.20*	21.20*	20.10*	18.20*	21.40*	12.40*	20.10*	*	*
816	9.32	15.20	7.19	17.00	15.40	13.80	13.60	15.70	12.50	6.70	*	*
817	10.60	14.30	10.11	14.09	10.00	12.28	12.49	14.96	10.44	13.08	10.05	11.69
818	8.22	10.90	7.89	10.63	7.83	10.10	7.83	10.30	7.76	10.10	7.50	9.65
819	16.12*	17.94*	13.45*	18.78*	15.21*	19.69*	18.40*	20.16*	13.45*	18.69*	13.32*	23.56*
820	9.50	9.79	9.70	11.50	9.82	11.60	10.70	8.67	9.98	11.00	4.19	8.48
823	9.46	12.10	9.31	10.60	8.40	11.50	7.47	11.20	9.04	10.50	4.83	3.50

* = REJECTED

WATER LEGEND
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1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-18. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I M V S: PAGE 21

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 8

RAW DATA FOR AROCLOR 1016 ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	4	3	4	3	4	3	4	3	4	3	4	3
TRUE VALUE UG/L	40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52	40.99	55.52
LABORATORY NUMBER												
801	38.20	34.90	31.70	47.30	31.80	41.70	39.70	51.80	34.80	*	*	30.00*
802	38.70	52.40	37.70	45.50	36.00	46.90	32.50	40.10	34.40	38.90	26.90	30.30
803	32.00	42.00	34.40	46.40	33.10	47.50	*	*	29.20	41.60	31.50	43.00
804	29.30	49.90	35.10	48.80	22.30	45.70	34.90	37.20	30.50	48.30	23.80	37.10
805	28.70	35.30	28.90	30.30	26.30	80.70*	31.70	43.60	29.50	26.30	15.40	12.20
806	315.00*	717.00*	571.00*	692.00*	360.00*	528.00*	521.00*	784.00*	362.00*	475.00*	264.00*	241.00*
807	38.60	47.10	43.30	55.80	43.80	52.30	31.40	45.20	38.20	40.80	6.75	10.40
808	27.90*	20.50*	23.54*	29.45*	17.84*	22.50*	19.66*	37.53*	9.99*	28.16*	3.25	14.01
809	25.50	50.50	27.20	52.40	32.30	53.80	25.40	55.50	29.20	46.30	19.70	57.90
810	36.70	51.50	41.90	56.40	45.80	64.70*	51.30	74.60*	48.30	48.60	29.10	16.90
811	22.70*	7.90*	21.20*	8.10*	24.00*	7.70*	21.20*	8.00*	19.30*	8.10*	20.20	5.80
812	35.10	46.40	38.20	52.10	32.50	45.80	37.80	48.90	27.10	42.40	23.30	29.60
813	28.70	27.75	23.50	46.20	24.20	46.30	29.30	33.80	33.40	24.00	24.10	14.00
814	60.70*	86.90*	57.60*	13.80*	51.60*	74.00*	55.10*	67.00*	57.90*	71.90*	*	*
816	33.60	48.20	34.30	47.20	35.90	45.30	36.40	45.00	33.30	49.90	2.65*	4.53*
817	38.21	47.80	36.51	45.79	36.58	46.75	37.52	49.01	37.04	48.50	27.70	34.58
818	42.30	48.60	41.30	46.80	41.00	46.60	42.60	49.10	42.60	47.10	37.80	41.50
819	48.21*	81.75*	44.70*	72.94*	63.92*	80.21*	55.59*	67.35*	59.44*	61.22*	45.27*	63.07*
820	24.40	45.40	41.10	60.80	38.90	45.90	37.40	43.60	38.20	11.80	21.40	19.20
823	31.20	37.60	28.10	40.30	23.70	39.30	34.40	37.30	31.90	47.30	32.80	25.20

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-18. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I N V S1 PAGE 22

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 8

RAW DATA FOR AROCLOR 1016 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	5	5	5	5	6	5	6	5	6	5	6	5
TRUE VALUE UG/L	61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28	61.49	83.28
LABORATORY NUMBER												
801	55.10	76.70	55.00	74.00	46.00	76.50	50.00	74.60	25.60	76.30	*	*
802	59.30	74.20	57.70	69.20	54.40	68.60	59.10	54.00	51.50	64.90	48.10	65.50
803	43.60	68.00	48.40	68.00	47.80	68.30	41.90	61.10	50.40	65.00	42.40	54.00
804	45.90	81.40	56.30	66.00	28.30	70.40	49.00	60.30	35.20	59.40	36.90	47.20
805	49.50	54.00	48.60	51.00	40.60	49.90	45.90	53.10	43.60	56.30	26.90	32.30
806	1050.00*	1441.00*	1049.00*	957.00*	720.00*	923.00*	372.00*	1180.00*	511.00*	166.00*	226.00*	562.00*
807	58.70	73.00	53.90	62.90	59.50	72.80	51.30	71.30	48.20	67.70	15.13	15.30
808	32.18*	51.50*	37.38*	45.87*	27.22*	41.04*	28.22*	39.07*	30.86*	44.42*	23.62	16.61
809	45.40	70.90	49.90	71.60	53.50	87.70	27.20*	69.20	52.70	46.00	8.15	70.60
810	64.00	93.50	65.20	85.00	65.90	94.50	54.70	67.60	52.90	61.00	26.30	28.30
811	6.20*	13.90*	7.40*	11.90*	7.90*	12.40*	6.80*	10.10*	6.30*	9.90*	5.80	9.80
812	54.10	75.30	55.70	73.30	51.90	68.10	54.50	74.70	48.30	63.60	34.60	47.70
813	49.60	40.70	32.10*	54.40	41.40	63.50	40.80	61.70	30.80	60.80	23.60	47.50
814	84.40*	108.00*	49.40	110.00	86.70*	90.80*	68.90*	104.00*	60.30*	108.00*	*	*
816	48.20	53.90	55.90	55.30	58.60	63.30	52.00	55.30	53.80	69.50	7.46*	13.00*
817	47.93	70.23	48.27	71.10	50.13	69.65	50.05	82.31	50.25	72.60	42.67	51.36
818	58.20	73.70	58.20	75.10	64.50	81.60	61.40	81.60	60.80	74.50	51.50	65.80
819	73.83*	83.16*	75.53*	106.09*	57.88*	94.75*	79.49*	104.05*	67.61*	102.57*	72.89*	105.19*
820	45.70	50.00	47.30	95.90	43.90	45.00	50.10	47.10	43.80	94.90*	38.20	41.70
823	48.80	65.90	49.60	73.50	46.70	61.40	59.10	76.80	51.80	70.90	54.90	68.20

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-19.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

RAW DATA FOR AROCLOR 1221 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	6	2	6	2	6	2	6	2	6	2	6	2
TRUE VALUE UG/L	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91	31.86	23.91
LABORATORY NUMBER												
801	44.10	34.60	92.80*	28.10	37.40	20.30	51.60	25.30	31.20	34.50	*	14.40
802	30.30	21.70	29.10	21.60	23.00	20.30	30.90	20.50	28.10	21.40	27.40	18.30
803	12.20*	10.20*	9.60*	8.60*	10.00*	8.50*	11.00*	12.00*	11.00*	8.00*	9.00	8.80
804	12.90*	10.80*	10.60*	10.60*	10.20*	10.10*	4.87*	15.10*	8.43*	2.61*	4.45*	2.98*
805	55.50	23.00	56.60*	17.80	53.20	18.90	42.80	21.00	56.30	15.30	36.10	17.80
806	549.00*	397.00*	528.00*	422.00*	263.00*	232.00*	427.00*	307.00*	216.00*	396.00*	160.00*	181.00*
807	15.40*	23.50*	16.90	24.20	11.30	31.40	21.50	15.70	10.40	29.30	10.50	7.37
808	17.08	10.42	14.17	8.33	16.25	10.41	12.08	10.83	17.50	13.96	7.37	3.12
809	13.90	16.40	13.00	19.10	13.90	13.00	20.70	15.30	2.30	17.90	8.00	11.60
810	49.80	21.30	18.10	16.80	64.20	23.90	61.60	44.60	44.90	25.20	20.00	15.40
811	31.60	72.40*	33.30	74.60*	27.90	70.70*	26.40	68.20	29.70	65.40*	30.20	67.90*
812	20.90	20.60	22.90	23.20	23.30	21.20	19.00	16.50	23.70	19.10	12.80	22.60
813	21.10	17.20	19.90	17.40	25.80	15.30	14.80	16.60	25.80	19.80	17.10	12.40
814	29.40	22.40	33.80	22.50	30.90	21.20	*	57.20	27.60	21.80	*	95.80*
816	30.70	210.00*	34.10	39.10	34.90	43.90	29.00	49.60	37.20	43.50	9.05	*
817	38.55	29.14	39.17	33.30	38.07	28.61	40.00	35.00	36.45	29.17	36.86	20.00
818	29.30	28.30	27.40	28.20	28.90	25.30	30.40	26.50	28.30	26.60	27.30	23.50
819	80.19*	54.07*	50.89*	51.93*	58.55*	51.78*	63.86*	63.46*	63.41*	58.59*	61.37*	52.98*
820	26.60	22.80	23.70	24.50	21.90	24.60	20.30	15.00	25.70	25.80	*	9.88
823	29.30	25.00	29.90	14.80	29.90	10.00	18.30	35.70	30.80	25.50	36.30	16.90

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-19. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

RAW DATA FOR AROCLOR 1221 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
TRUE VALUE UG/L	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81	63.73	47.81
LABORATORY NUMBER												
801	69.40	87.70	144.00*	79.60	105.00*	79.10	88.40	57.60	70.90	50.60	*	40.20
802	53.40	44.30	51.10	41.90	51.10	44.60	47.60	34.90	50.60	40.40	45.60	41.10
803	29.00*	21.20*	33.00*	16.40*	23.00*	16.00*	26.00*	19.40*	23.00*	16.40*	22.20	16.00
804	*	14.10*	33.70*	21.70*	25.80*	18.50*	11.60*	17.00*	21.80*	29.30*	*	4.66*
805	66.80	50.30	58.00	48.60	76.10	42.10	83.50	47.50	67.00	45.40	42.00	30.60
806	782.00*	890.00*	816.00*	868.00*	556.00*	430.00*	655.00*	711.00*	420.00*	128.00*	375.00*	184.00*
807	26.90*	14.00*	25.60	11.40	31.10	16.20	28.30	29.30	21.50	13.30	25.30	16.90
808	50.00	19.17	41.67	20.83	46.67	21.67	27.50	105.83*	42.08	17.50	26.67	6.67
809	30.80	28.40	38.70	35.10	32.40	24.50	32.50	30.00	39.40	29.30	24.90	21.50
810	48.30	81.60	65.30	80.30	63.00	42.00	68.80	58.70	48.90	41.60	13.90	15.60
811	52.30	32.80	50.00	33.10	48.10	27.90	42.00	26.70	44.00	28.20	48.00	22.40
812	44.80	41.10	46.60	43.00	41.20	35.00	42.80	45.00	40.70	36.50	25.10	22.30
813	56.70	42.20	47.60	32.70	46.10	36.00	46.70	42.30	57.60	37.80	45.40	33.10
814	105.00	42.80	52.50	44.80	53.60	63.10	50.60	77.80	35.10	37.70	*	85.60*
816	64.40	43.20	76.50	39.20	62.50	37.80	67.00	39.60	129.00*	41.80	*	4.85
817	77.73	54.29	59.98	49.97	71.73	50.10	75.00	55.00	70.82	50.20	62.72	31.78
818	62.80	46.20	64.40	44.30	64.40	47.80	67.50	48.40	64.30	45.60	61.90	42.40
819	106.32	101.69	77.47*	94.98*	89.24*	98.12*	97.00*	91.84*	88.96*	100.19*	88.57*	102.95*
820	52.40	35.30	55.80	34.90	54.60	63.60	29.70	*	9.07	32.90	23.20	12.50
823	72.60	79.00	65.20	79.00	56.80	71.80	84.60	70.80	44.40	60.20	18.80	53.40

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-19. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

RAW DATA FOR AROCLOR 1221 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	4	1	4	1	4	1	4	1	4	1	4	1
TRUE VALUE UG/L	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47	191.18	143.47
LABORATORY NUMBER												
801	298.00	285.00*	212.00	176.00	194.00	207.00	217.00	156.00	227.00	170.00	*	188.00
802	164.00	129.00	145.00	121.00	160.00	121.00	147.00	119.00	167.00	124.00	116.00	127.00
803	75.00*	57.00*	57.00*	45.00*	62.00*	45.00*	68.00*	47.00*	71.00*	62.00*	62.00	42.00
804	77.60*	63.50*	57.10*	58.10*	83.00*	61.40*	36.70*	14.30*	63.80*	41.40*	24.20*	42.00*
805	262.00	158.00	269.00	176.00	266.00	155.00	232.00	182.00	168.00	139.00	140.00	116.00
806	1380.00*	956.00*	988.00*	1036.00*	999.00*	1028.00*	1048.00*	1000.00*	1080.00*	660.00*	773.00*	556.00*
807	52.10*	52.10*	53.70	45.90	51.50	43.70	113.60	99.70	39.60	30.30	35.60	29.00
808	114.69	70.01	124.17	84.17	104.99	74.99	116.67	66.33	131.67	68.33	124.99	13.99
809	208.00	95.40	89.40	98.10	77.60	64.80	129.00	65.40	98.50	66.10	53.40	54.50
810	126.00	153.00	47.70	114.00	185.00	261.00	170.00	158.00	166.00	149.00	87.80	56.00
811	12.50	164.00	14.20	158.00	13.10	162.00	11.60*	149.00	12.50	154.00	10.80	122.00
812	150.00	129.00	165.00	135.00	147.00	126.00	146.00	126.00	147.00	123.00	74.40	63.10
813	172.00	142.00	146.00	125.00	175.00	140.00	190.00	162.00	155.00	145.00	135.00	90.50
814	150.00	68.30	154.00	119.00	152.00	105.00	200.00	167.00	146.00	126.00	268.00	93.30
816	235.00	126.00	239.00	130.00	227.00	132.00	214.00	120.00	217.00	125.00	97.20	130.00
817	211.42	188.39	214.07	170.59	214.93	166.93	205.00	205.00	221.66	160.90	149.61	136.52
818	195.00	170.00	189.00	171.00	203.00	160.00	181.00	157.30	203.00	177.00	176.00	151.00
819	215.06	151.77	216.07*	*	220.37*	186.31*	259.32*	209.82*	216.32*	181.96*	205.76*	143.18*
820	134.00	130.00	133.00	127.00	67.90	67.00	113.00	127.00	136.00	136.00	59.40	56.10
823	203.00	120.00	187.00	150.00	193.00	132.00	149.00	181.00	253.00	118.00	154.00	*

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A.20

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 6

RAW DATA FOR AROCLOR 1232 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
YOUDEN PAIR	4	3	4	3	4	3	4	3	4	3	4	3
E VALUE UG/L	24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77	24.77	30.77
ORATORY NUMBER												
	66.10	44.80	29.90	37.50	24.60	51.00	100.00*	63.20	28.70	36.30	*	*
	21.00	23.40	19.60	25.90	20.00	23.30	22.90	21.80	20.80	20.60	19.50	20.80
	18.40	22.50	16.00	17.00	16.30*	20.60*	13.20*	16.40*	15.70	19.50	15.30	19.90
	21.10	27.20	20.20	20.40	22.00	25.10	21.80	18.10	19.30	21.20	5.93	11.80
	12.80*	14.00*	10.60*	12.30*	10.90*	12.80*	11.20*	9.69*	5.33*	13.10*	6.38	10.10
	437.00*	393.00*	498.00*	417.00*	229.00*	139.00*	507.00*	145.00*	181.00*	218.00*	105.00*	173.00*
	35.60	39.10	17.30	16.70	28.80	35.30	24.40	34.50	34.10	35.70	2.81	2.42
	61.72	69.21	62.31*	60.02*	61.32*	53.27	54.62	53.08	28.27	31.15	6.28	6.93
	20.90	24.30	16.00	21.40	19.60	23.70	24.90	31.90	22.00	28.80	11.60	15.30
	*	23.00*	12.40*	13.70*	17.80*	13.90*	12.30*	20.60*	8.81*	14.30*	10.40	13.60
1	37.20	*	33.30	*	28.20	*	30.10	*	32.60	*	22.40	*
2	27.30	37.40	33.70	31.50	26.90	24.40	37.10	34.10	19.80	26.50	17.30	19.60
3	15.70	21.40	16.50	35.80	18.30	19.20	21.50	24.00	15.90	18.80	15.80	20.20
4	71.20	60.40	47.70*	57.70*	49.40*	54.80*	47.90	48.80	27.40	54.40*	119.00*	50.50*
6	25.70	32.00	24.50	29.00	25.90	32.60	21.10	29.00	21.30	29.80	2.75*	2.37*
7	28.18	29.98	27.01	29.24	*	29.44	25.15	26.46	24.00	30.22	16.67	20.61
8	37.30	43.20	37.60*	41.30*	37.20	42.10	37.30*	42.10*	39.30*	44.10*	35.40*	40.60*
9	35.34	32.91	38.11	39.48	32.08	35.82	30.48	31.18	26.11	22.86	28.33	29.58
0	141.00*	27.60	123.00*	25.60	143.00*	26.30	152.00*	29.90	211.00*	26.00	8.07	5.06
3	50.70	33.90	40.80	28.20	41.70	32.10	23.70	37.20	39.60	23.40	*	23.40

* REJECTED

TER LEGEND

. - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-20. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

I N V S: PAGE 21

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 6

RAW DATA FOR AROCLOR 1232 ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
TRUE VALUE UG/L	1 49.54	2 61.54	1 49.54	2 61.54	1 49.54	2 61.54	1 49.54	2 61.54	1 49.54	2 61.54	1 49.54	2 61.54
LABORATORY NUMBER												
801	66.20	81.50	79.70	82.70	61.80	76.50	57.90	67.10	62.20	82.00	56.40	60.30
802	36.00	46.50	37.10	53.50	41.40	50.60	40.90	50.50	37.50	50.50	34.50	44.50
803	39.50	46.20	32.00	38.00	29.10*	38.00*	31.40*	38.70*	32.50	40.70	34.50	39.70
804	41.20	50.60	15.70	34.40	14.00	52.20	41.60	31.20	43.60	77.00	16.60	25.90
805	18.60*	39.80*	21.00*	32.50*	14.30*	37.10*	16.70*	30.40*	21.30*	33.80*	10.60	24.30
806	302.00*	559.00*	111.00*	449.00*	275.00*	525.00*	138.00*	514.00*	321.00*	453.00*	262.00*	337.00*
807	55.70	69.70	53.80	33.90	45.50	50.60	64.80	70.20	54.20	59.30	30.00	17.50
808	44.62	72.31	47.31	69.23	51.92	78.46	49.62	86.54	44.99	77.30	34.62	62.31
809	48.00	56.70	44.00	48.50	44.70	56.30	53.90	74.00	46.70	56.10	19.80	35.60
810	*	38.00*	17.50*	24.50*	37.50*	36.60*	24.20*	40.00*	14.70*	*	14.40	12.90
811	24.20	65.30	22.20	64.00	21.00	57.00	17.40*	54.00	18.90	50.10	16.00	47.00
812	45.90	54.80	52.40	65.60	52.60	64.10	50.60	66.20	49.00	58.40	37.50	41.50
813	42.90	47.50	43.80	43.90	43.40	42.20	50.20	46.90	39.60	45.60	44.10	41.10
814	79.40	109.00	90.60*	102.00*	88.60*	110.00*	61.00	100.00	89.50	109.00	103.00*	95.20*
816	45.80	56.50	45.40	36.30	47.00	53.70	45.40	42.80	40.70	51.10	6.91*	14.20*
817	51.54	73.79	53.50	69.79	55.88	72.39	50.79	63.96	59.31	71.00	43.97	59.69
818	86.60	94.10	82.50*	97.70*	86.10	89.40	86.20*	96.80*	81.60*	98.50*	80.70*	97.70*
819	83.15	90.45	91.78	85.95	89.70	75.59	40.91	54.82	80.65	81.60	66.48	84.93
820	25.10	268.00*	52.00	66.00	33.90	53.40	46.30	83.10	45.30	90.50	24.60	*
823	59.40	67.20	58.50	94.80	53.40	85.20	51.60	54.30	57.90	69.90	*	73.80

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-20. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 6

RAW DATA FOR AROCLOR 1232 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	6	5	6	5	6	5	6	5	6	5	6	5
TRUE VALUE UG/L	148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61	148.61	184.61
LABORATORY NUMBER												
801	737.00*	255.00	200.00	360.00	209.00	254.00	215.00	241.00	1871.00*	190.00	*	*
802	107.00	136.00	112.00	133.00	117.00	*	122.00	125.00	79.80	124.00	97.40	66.30
803	105.00	125.00	91.40	122.00	98.00*	119.00*	97.90*	108.00*	97.00	119.00	91.20	120.50
804	128.00	140.00	133.00	171.00	139.00	159.00	123.00	160.00	11.90	64.00	37.80	39.80
805	*	105.00*	*	94.90*	*	64.00*	*	67.70*	*	107.00*	*	*
806	261.00*	457.00*	308.00*	496.00*	397.00*	392.00*	334.00*	353.00*	279.00*	332.00*	436.00*	395.00*
807	138.30	147.60	72.50	64.30	147.20	125.10	22.70	49.80	130.80	143.30	43.50	54.40
808	180.00	297.69	179.99	242.31	178.46	290.38	138.46	292.15	130.78	200.78	27.69	31.15
809	139.00	182.00	139.00	136.00	150.00	189.00	149.00	167.00	146.00	186.00	82.80	91.20
810	72.50*	96.40*	58.70*	72.10*	93.80*	75.20*	67.70*	90.90*	69.40*	77.40*	59.30	57.50
811	73.10	113.00	72.00	105.00	70.20	112.00	67.40	109.00	57.90	98.20	49.50	88.00
812	161.00	172.00	183.00	187.00	166.00	165.00	165.00	200.00	150.00	177.00	83.50	98.90
813	105.30	170.40	50.10	169.70	128.80	134.50	101.50	140.40	113.50	157.60	54.10	100.30
814	216.00	239.00	206.00*	227.00*	208.00*	244.00*	202.00	240.00	147.00	234.00	517.00*	*
816	148.00	150.00	166.00	160.00	109.00	156.00	148.00	166.00	177.30	156.00	4.89*	26.50*
817	128.10	162.69	140.29	191.30	133.85	197.69	136.96	189.10	139.97	196.25	133.81	146.84
818	215.00	290.00	215.00*	291.00*	217.00	275.00	230.00*	292.00*	213.00*	281.00*	202.00*	281.00*
819	144.72	229.99	173.82	197.46	127.99	239.27	147.89	210.18	159.96	214.06	146.68	165.84
820	152.00	24.40	155.00	40.50	166.00	28.90	143.00	29.00	156.00	1.81	63.60	5.90
823	276.00	260.00	199.00	213.00	243.00	214.00	203.00	204.00	273.00	262.00	215.00*	221.00

* = REJECTED

WATER LEGEND

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4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1242 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
TRUE VALUE UG/L	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12	13.02	15.12
LABORATORY NUMBER												
801	15.40	17.40	15.90	17.50	14.30	17.90	16.00	25.50	18.20	13.20	*	*
802	10.00	12.20	10.30	11.40	10.60	12.50	12.50	12.90	10.70	12.00	9.30	11.40
803	10.00	10.70	8.40*	10.90*	9.00	11.00	7.62*	9.57*	8.50*	10.00*	9.00	7.70
804	8.79*	7.68*	9.62	11.30	7.49*	9.19*	*	12.40	8.13*	9.34*	3.31	6.56
805	11.90	13.50	12.20	16.60	14.30	12.20	11.30	15.00	7.20	14.70	7.00	12.40
806	236.00*	311.00*	295.00*	332.00*	397.00*	430.00*	141.00*	165.00*	308.00*	108.00*	53.70*	69.20*
807	18.20	11.60	12.70	19.80	11.10	12.90	19.10	12.00	15.20	21.50	2.78*	5.21*
808	11.40	20.49	9.20	18.20	9.20	18.32	10.72	15.36	9.11	19.20	3.61	2.03
809	10.00	9.54	13.40	10.50	10.50	10.60	11.90	10.80	11.50	11.30	3.26	4.45
810	14.10	18.10	69.50*	11.90	18.60	18.80	16.70	14.50	14.50	14.50	9.10	21.90
811	41.40*	33.05*	37.80*	36.00*	32.10*	28.40	27.00	21.50	42.00*	25.00*	22.00*	20.00*
812	10.10	11.00	12.40	13.90	11.40	12.70	14.30	16.40	11.40	12.80	9.02	5.54
813	9.04	9.42	10.40	10.10	9.51	6.70	9.71	6.01	4.94	10.20	5.41	1.56
814	21.00	25.00	22.40*	27.00*	24.20*	26.20	22.70	38.70*	23.80*	24.30*	15.80*	65.20*
816	23.90*	26.40*	23.20*	23.20*	23.60*	26.40*	21.70*	24.40*	17.80	21.70	3.05	6.49
817	13.14	14.17	15.03	14.00	16.03	17.24	17.98	16.63	15.25	16.22	14.98	12.56
818	11.20	11.50	11.90	11.30	12.30	11.10	11.90	12.20	11.60	11.50	10.10	11.50
819	10.26	14.69	10.15	13.60	9.71	9.31	10.12	16.28	9.98	11.09	9.09	15.62
820	16.00	11.20	11.40	11.50	12.20	12.60	11.40	13.90	11.40	13.60	6.80	2.21
823	10.60*	5.75*	8.94	14.10	10.10	11.40	8.46	6.33	10.20	10.50	10.50	3.08

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-21. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1242 ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	4	6	4	6	4	6	4	6	4	5	4	5
TRUE VALUE UG/L	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24	26.05	30.24
LABORATORY NUMBER												
801	27.90	38.70	33.90	59.90	28.30	37.20	34.80	43.00	33.30	63.40*	*	*
802	22.20	25.70	21.60	24.10	22.40	25.70	22.10	27.70	22.40	14.30	18.20	20.90
803	19.00	25.40	18.50*	21.00*	19.20	*	16.80*	20.90*	17.00*	22.40*	14.60	15.20
804	19.70*	23.40*	21.50	25.20	*	19.80*	23.90	28.10	17.00*	18.40*	8.04	8.37
805	21.90	27.00	23.60	32.90	26.10	30.90	21.50	37.00	17.00	33.80	16.20	21.20
806	483.00*	528.00*	370.00*	577.00*	221.00*	86.70*	329.00*	237.00*	198.00*	221.00*	138.00*	321.00*
807	43.50	44.50	31.40	27.80	21.60	22.90	20.10	25.40	30.30	31.40	5.06*	4.31*
808	16.79	21.61	15.89	20.56	17.20	22.53	12.96	21.01	11.90	19.14	9.63	2.83
809	15.20	19.90	18.60	21.10	18.30	22.30	19.20	26.00	19.30	22.70	14.30	12.90
810	34.00	9.00	21.10	50.30	55.80	23.60	31.30	34.30	26.70	35.00	10.00	20.70
811	67.70*	83.50*	54.70*	77.70*	45.90	64.90*	44.10	54.20	58.00*	74.60*	39.00*	67.00*
812	20.40	18.30	24.20	26.80	22.40	24.80	24.60	28.60	24.20	25.60	12.50	14.00
813	19.60	25.30	22.60	25.70	22.00	25.00	22.50	28.20	19.70	23.50	4.98	15.10
814	44.30	51.50	33.90	51.00	44.40	36.80	37.60	51.50	44.60*	43.80*	43.00*	18.50*
816	44.50*	54.90*	39.50*	52.20*	44.50*	54.30*	41.10*	62.50*	35.20	34.80	8.24	8.54
817	33.00	35.44	32.36	38.80	34.70	32.13	30.94	38.98	33.02	36.05	23.66	30.22
818	23.70	27.40	23.40	26.90	24.60	25.00	25.40	24.20	25.00	25.70	23.00	22.50
819	24.37	29.54	24.18	32.93	24.03	30.32	23.66	39.25	23.91	31.14	24.05	30.39
820	35.10	37.30	25.30	28.10	25.90	24.00	26.70	37.00	25.70	28.20	10.00	6.04
823	9.85*	11.50*	19.20	34.20	9.05	10.40	23.50	28.20	8.19	29.20	8.38	6.17

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-21. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1242 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	2	1	2	1	2	1	2	1	2	1	2	1
TRUE VALUE UG/L	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84	91.17	105.84
LABORATORY NUMBER												
801	156.00*	132.00	110.00	102.00	107.00	103.00	109.00	122.00	104.00	105.00	84.60	387.00*
802	73.20	85.40	72.90	80.30	69.70	80.70	65.90	80.90	63.20	77.10	53.10	*
803	72.40	82.40	67.50*	84.20*	65.60	80.80	57.40*	73.70*	63.00*	73.60*	41.60	82.80
804	71.50*	79.50*	75.80	88.50	59.30*	73.00*	72.70	83.60	54.40*	70.20*	29.50	46.20
805	84.20	86.00	89.00	96.00	84.60	75.20	95.00	103.00	88.80	91.30	65.10	71.80
806	374.00*	432.00*	355.00*	382.00*	415.00*	645.00*	296.00*	337.00*	628.00*	700.00*	247.00*	519.00*
807	64.30	67.50	82.30	88.40	35.50	37.40	81.90	93.30	85.80	90.90	10.90*	15.10*
808	101.60	84.71	86.36	95.80	104.12	88.40	54.86	86.11	75.69	78.03	30.43	22.40
809	86.70	97.00	108.00	124.00	88.10	119.00	107.00	132.00	84.30	85.80	47.60	55.40
810	97.10	7.12*	83.50	73.90	132.00	128.00	144.00	149.00	86.90	96.90	47.20	49.40
811	121.00*	114.00*	115.00*	110.00*	106.00	105.00	79.00	71.40	102.00*	97.00*	85.00*	760.00*
812	72.40	91.80	94.80	106.00	78.30	93.40	88.60	103.00	85.60	95.40	62.00	54.90
813	74.40	81.00	72.20	83.30	67.10	76.60	79.40	81.90	72.90	79.90	37.60	66.20
814	108.00	92.00	102.00	106.00	104.00	107.00	104.00	109.00	106.00*	113.00*	156.00*	284.00*
816	142.00*	137.00*	133.00*	116.00*	145.00*	134.00*	140.00*	120.00*	83.00	122.30	32.60	24.70
817	94.75	118.11	92.37	119.32	92.77	109.59	96.76	114.49	97.12	110.23	66.69	92.28
818	73.10	88.70	75.40	91.30	71.70	90.60	71.70	89.10	71.20	87.30	64.70	81.80
819	108.50	111.64	119.27	130.45	118.99	119.50	129.32	124.93	96.91	125.95	125.74*	171.36*
820	91.50	88.60	102.00	87.90	84.60	*	88.20	107.00	86.20	108.00	47.20	50.20
823	71.20*	63.80*	77.20	93.60	76.60	84.00	69.20	74.20	58.30	64.60	37.80	66.40

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-22.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

RAW DATA FOR AROCLOR 1243 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	6	2	6	2	6	2	6	2	6	2	6	2
TRUE VALUE UG/L	16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00	16.41	22.00
LABORATORY NUMBER												
801	18.50	28.20	49.90*	26.40*	19.40	17.00	18.10	19.30	13.10	25.40	*	5.85
802	16.70	20.20	16.70	21.40	13.00	20.50	17.30	19.60	13.80	20.70	12.40	14.90
803	14.60	19.40	11.80	17.50	14.60	17.20	8.60	17.80	9.60	15.40	9.60	16.00
804	16.40	22.70	13.80	20.80	12.50	19.10	14.20	24.00	13.50	19.40	4.44*	6.14*
805	27.30	16.80	29.60	13.20	23.20	16.10	23.80	20.30	26.00	16.30	33.10*	12.10
806	268.00*	335.00*	957.00*	332.00*	152.00*	214.00*	132.00*	315.00*	124.00*	300.00*	105.00*	142.00*
807	16.20	20.30	13.10	17.50	15.90	22.20	14.60	26.60	12.30	18.80	1.33	1.58
808	19.58	22.21	17.47	18.20	18.20	21.84	18.25	16.02	17.47	16.94	5.26	4.51
809	12.60	19.40	15.93	19.60	12.40*	16.40*	14.10	16.30	2.47	18.40	4.28	8.76
810	18.40	17.70	4.24	14.50	45.30*	15.50	20.70	17.40	13.90	15.90	7.71	1.82
811	34.70*	43.60*	31.00	48.70	32.00*	42.10*	27.20	38.70*	29.80	46.40	26.40*	49.50*
812	14.90	21.40	15.60	24.40	16.10	23.30	13.40	19.10	16.30	20.90	6.74	19.70
813	15.60	18.00	14.10	16.90	16.70	16.50	8.04	15.60	13.30	16.20	11.20	13.60
814	26.20	35.00*	26.80*	33.50*	27.30*	34.30*	27.10*	36.20*	27.50	33.60	*	37.40*
816	16.00	11.50	11.00	46.50	13.50	48.80*	10.60	47.90*	13.60	44.50	2.42	6.16
817	18.16	22.09	16.26	23.62	16.83	21.25	17.51	22.10	16.20	21.87	17.71	18.91
818	14.90	20.40	14.50	21.00	15.80	19.60	15.40	22.60	14.50	19.80	15.60	18.10
819	12.49*	13.69*	10.39*	14.17*	11.36*	13.29*	10.39*	13.75*	10.20*	12.40*	11.36	11.63
820	21.10	24.70	19.10	25.70	18.90	25.10	20.80	55.80*	34.60	25.00	*	9.39
823	12.20	17.00	12.50	13.50	14.10	9.50	10.80	17.50	11.90	16.40	14.60	8.19

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

TABLE A-22. (CONT'D)

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

RAW DATA FOR AROCLOR 1248 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
TRUE VALUE UG/L	32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00	32.82	44.00
LABORATORY NUMBER												
801	28.40	71.20	50.60*	69.70*	39.20	43.10	26.60	54.00	19.20	25.60	*	14.90
802	36.80	47.20	34.90	42.90	33.50	46.90	32.90	36.20	36.80	37.30	22.60	33.40
803	29.50	40.00	26.00	34.40	24.00	30.20	32.40	35.30	23.20	30.00	22.40	28.00
804	*	31.70	38.90	43.60	30.80	37.30	24.50	67.40	29.80	39.50	*	10.00*
805	42.40	36.40	31.50	39.90	31.50	30.70	38.70	43.70	32.70	37.00	18.00	26.60
806	492.00*	673.00*	489.00*	669.00*	368.00*	359.00*	466.00*	860.00*	219.00*	99.90*	215.00*	138.00*
807	27.80	26.80	25.60	29.90	26.30	37.00	24.50	37.80	17.80	23.00	16.00	14.90
808	52.43	48.25	51.33	42.23	49.85	40.78	32.77	44.66	49.51	47.71	21.12	8.74
809	21.20	34.90	23.30	48.20	22.20*	33.90*	24.10	36.20	24.00	31.30	12.30	15.30
810	23.30	52.50	34.60	51.60	28.80	37.40	27.80	41.90	19.40	34.90	0.55	1.64
811	53.40	70.00	55.00	75.00*	50.00	74.00*	41.00	71.90	48.00	68.40	47.00*	56.80*
812	32.90	43.10	34.60	43.00	31.60	36.50	28.70	36.50	31.10	38.30	18.00	19.50
813	36.20	39.60	34.60	33.00	30.90	33.40	36.60	35.50	34.50	31.50	26.30	27.90
814	51.60	65.70	51.80*	65.20*	51.30*	67.80*	49.80*	63.40*	34.30	63.10	*	58.60*
816	33.90	45.60	41.40	37.20	36.90	42.00	38.50	49.30	36.70	34.80	*	8.80
817	34.21	39.19	32.90	37.37	33.80	38.81	30.40	40.47	32.97	39.07	32.53	18.11
818	29.10	33.70	29.70	34.60	30.60	36.50	29.90	35.80	29.60	34.70	27.50	33.10
819	20.04*	29.04*	13.96*	27.74*	16.37*	24.07*	17.27*	22.44*	16.53*	29.13*	14.77	21.67
820	30.90	36.50	32.40	37.40	22.00	62.30*	29.60	*	47.10	31.90	12.80	11.90
823	22.80	50.60	17.00	43.40	20.40	49.30	27.40	47.70	22.20	50.20	16.40	22.60

* = REJECTED

WATER LEGEND

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TABLE A-22. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 7

RAW DATA FOR AROCLOR 1248 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	4	1	4	1	4	1	4	1	4	1	4	1
TRUE VALUE UG/L	114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00	114.86	154.00
LABORATORY NUMBER												
801	164.00	272.00*	127.00*	169.00*	90.30	128.00	88.50	130.00	77.50	132.00	*	56.10
802	122.00	147.00	125.00	137.00	112.00	123.00	119.00	134.00	99.20	131.00	62.50	125.00
803	107.00	142.00	92.10	120.00	87.20	120.00	100.00	135.00	84.20	135.00	76.00	91.00
804	109.00	151.00	79.40	146.00	113.00	152.00	97.50	123.00	107.00	136.00	24.50*	22.80*
805	118.00	123.00	124.00	146.00	132.00	142.00	131.00	140.00	89.00	129.00	72.40	104.00
806	1060.00*	1010.00*	1320.00*	1540.00*	983.00*	620.00*	963.00*	1360.00*	793.00*	1080.00*	519.00*	637.00*
807	72.50	85.50	62.00	80.20	74.30	92.00	96.80	118.20	55.10	81.60	26.80	24.60
808	244.55*	166.01	210.58	146.50	236.89*	184.88	166.02	188.83	142.71	212.62	142.72	26.21
809	172.00	120.00	73.70	126.00	65.80*	92.80*	92.00	94.10	76.70	102.00	37.00	61.20
810	73.10	142.00	28.80	113.00	95.00	259.00*	79.70	130.00	82.60	123.00	42.20	42.80
811	99.30	160.00	101.00	150.00	92.00	155.00	84.00	140.00	92.60	138.00	94.70*	145.00*
812	109.00	133.00	119.00	142.00	109.00	135.00	106.00	136.00	98.70	127.00	54.00	65.10
813	91.30	131.00	91.00	119.00	79.30	119.00	81.00	126.00	70.50	127.00	66.50	77.30
814	163.00	199.00	169.00*	180.00*	161.00*	173.00*	167.00*	209.00*	147.00	206.00	160.00	148.00
816	147.00	172.00	150.00	179.00	149.00	172.00	145.00	179.00	123.00	159.00	25.40	29.80
817	104.94	157.97	106.93	142.58	110.54	140.03	102.10	147.81	109.06	135.78	7431.00*	126.23
818	107.00	129.00	106.00	147.00	101.00	155.00	103.00	135.00	107.00	146.00	90.60	125.00
819	49.38*	57.43*	46.60*	*	46.39*	56.55*	52.50*	63.16*	48.53*	57.72*	46.09	49.55
820	131.00	142.00	132.00	142.00	68.40	68.00	117.00	131.00	51.20	73.60	59.90	57.30
823	95.40	110.00	91.80	116.00	92.70	120.00	78.30	130.00	99.00	110.00	62.10	94.00

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
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TABLE A-23.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1254 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
LOW YOUDEN PAIR	5	3	5	3	5	3	5	3	5	3	5	3
TRUE VALUE UG/L	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60	17.39	21.60
LABORATORY NUMBER												
801	12.90	14.30	13.20	16.60	11.20	15.60	13.60	14.30	13.40	15.00	*	*
802	9.80	17.40	13.00	16.50	12.90	17.40	13.20	16.80	10.70	15.80	10.30	12.80
803	13.50	15.00	14.00	18.40	11.40	17.30	12.50	16.10	8.50	12.50	10.50	9.50
804	12.40	11.40	15.90	19.30	13.60	17.10	*	16.00	10.60	15.10	5.28	8.97
805	14.10	16.30	14.80	18.60	16.20	15.20	11.70	17.60	15.10	17.30	7.40	12.00
806	269.00*	450.00*	416.00*	521.00*	193.00*	202.00*	895.00*	184.00*	55.60*	156.00*	92.30*	113.00*
807	14.10	12.50	10.80*	14.70*	11.90	11.90	8.01*	11.10*	8.30	13.40	3.64*	1.72*
808	8.62	18.48	6.89*	16.21*	7.72*	17.93*	6.45*	16.55*	6.38*	12.93*	3.79*	0.72*
809	9.11*	11.00*	15.70	10.70	11.30	11.40	13.70	14.70	10.90	13.00	4.01	5.28
810	17.80	23.10	62.40*	16.80	25.10	26.60	15.60	15.00	13.60	17.50	9.00	12.10
811	31.60	26.80	29.90	24.70	28.60	25.20	20.60	17.50	25.60*	22.70*	29.20*	21.00
812	13.40	15.50	15.50	18.00	13.60	16.70	14.50	17.20	11.90	15.80	12.00	6.80
813	13.30	12.50	14.10	12.70	13.50	13.20	14.30	10.90	7.22	12.40	10.50	1.90
814	30.20	33.70	31.30	36.60*	33.90	39.50*	16.10	20.50	33.70*	33.00*	28.90*	23.00*
816	21.50	22.80	21.50	22.60	22.10	23.00	21.70	23.10	13.30	12.80	2.21	5.46
817	7.83	27.80	13.50	23.25	10.95	22.97	10.75	26.48	10.33	12.06	8.92	22.26
818	14.00	16.10	14.30	15.60	15.40	17.10	15.10	17.00	13.50	16.70	11.60	16.10
819	10.04	15.13	10.11	14.05	8.77	9.76	9.10	14.45	10.31	10.86	8.99	14.45
820	17.10	12.30	18.10	11.90	12.40	12.60	11.70	14.10	10.20	12.70	3.65	1.48
823	14.80	15.70	14.40	16.80	13.60	20.20	13.90	21.80	15.40	18.20	9.32	4.02

* = REJECTED

WATER LEGEND
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1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-23. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1254 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
MEDIUM YOUDEN PAIR	4	6	4	5	4	6	4	6	4	6	4	6
TRUE VALUE UG/L	52.18	64.80	52.18	64.80	52.18	64.80	52.18	64.80	52.18	64.90	52.18	64.80
LABORATORY NUMBER												
801	47.70	66.30	51.10	63.40	48.60	55.70	61.70	68.60	43.40	100.00*	14.20	40.80
802	35.50	45.60	32.40	42.20	37.30	46.90	38.50	43.50	35.90	*	23.60	30.50
803	43.00	60.40	40.00	50.00	40.00	*	40.00	52.40	31.40	47.40	25.00	29.00
804	36.00	48.40	50.80	61.30	*	51.10	44.80	58.90	38.10	42.30	15.70	17.40
805	29.90	45.10	27.10	53.00	29.40	47.80	26.20	56.10	25.70	51.60	19.70	28.30
806	975.00*	1110.00*	1090.00*	629.00*	413.00*	541.00*	309.00*	1910.00*	428.00*	557.00*	315.00*	351.00*
807	35.60	30.50	32.30*	26.50*	30.90	32.00	28.40*	41.30*	27.90	31.00	6.10*	3.59*
808	10.43*	20.69	8.62*	22.41*	9.66*	21.74*	14.48*	19.39*	11.93*	22.76*	4.14*	1.56*
809	23.40*	31.80*	33.80	44.10	33.10	43.90	38.10	54.40	31.50	39.30	25.00	23.20
810	55.10	9.09	40.00	89.00	84.00*	44.70	54.70	61.00	47.20	64.00	11.60	32.20
811	59.20	63.90	60.00	61.70	52.20	67.00	38.60	41.70	54.00	58.70	52.00	51.00
812	40.00	39.20	44.20	52.00	41.00	47.00	41.00	48.60	40.90	44.80	19.70	20.40
813	50.30	61.40	53.70	62.60	51.30	59.90	47.20	59.50	47.60	55.40	11.10	30.30
814	57.80	72.50	48.80	70.00	61.00	85.50	47.90	72.20	65.10*	62.80*	61.40*	41.80*
816	50.40	63.80	48.90	66.60	50.40	63.00	51.50	65.50	25.80	20.30	9.14	14.40
817	33.00	38.80	31.92	44.40	26.74	40.51	28.15	42.70	34.17	39.31	24.68	22.66
818	43.20	47.30	41.60	47.30	40.90	45.60	44.10	43.70	41.60	45.80	39.60	40.90
819	45.51	60.34	44.85	61.87	44.94	59.40	38.70	69.81	38.34	61.62	38.85	57.95
820	45.30	46.40	32.10	40.30	33.60	31.00	35.20	45.40	31.90	37.00	10.70	7.78
823	39.00	54.60	44.20	57.60	38.90	44.80	54.20	42.40	32.00	62.00	26.40	24.90

* = REJECTED

WATER LEGEND

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2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-23. (CONT'D)

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 5

RAW DATA FOR AROCLOR 1254 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	2	1	2	1	2	1	2	1	2	1	2	1
TRUE VALUE UG/L	96.96	108.00	96.96	108.00	86.96	108.00	96.96	108.00	86.96	108.00	96.96	108.00
LABORATORY NUMBER												
801	63.10	89.20	60.00	69.50	57.30	70.40	59.50	89.00	52.50	67.40	42.50	257.00*
802	69.50	80.40	63.60	79.20	65.70	82.00	63.70	80.60	56.80	72.80	40.70	*
803	76.00	96.60	73.00	91.40	66.40	87.40	60.00	85.00	61.60	80.00	40.60	88.60
804	71.80	74.20	91.00	112.00	72.00	92.40	82.20	98.50	67.60	93.90	28.30	48.80
805	68.10	82.80	73.30	79.20	60.60	69.30	79.00	87.10	70.40	83.50	48.90	68.20
806	1460.00*	1920.00*	1650.00*	1980.00*	907.00*	967.00*	1220.00*	1810.00*	835.30*	1034.00*	282.00*	432.00*
807	55.90	59.90	55.30*	57.30*	51.40	58.00	60.50*	70.70*	54.00	54.70	14.60*	10.70*
808	42.76	49.66	55.52*	51.72*	47.24*	43.45*	38.76*	53.45*	48.03*	56.55*	19.31*	16.83*
809	62.00*	74.50*	84.30	102.00	73.50	110.00	96.00	124.00	73.30	77.00	41.50	53.10
810	83.70	2.29*	69.50	69.10	103.00	104.00	93.90	115.00	70.30	85.60	42.80	48.70
811	77.50	42.80	78.20	39.80	75.00	44.00	50.60	27.90*	61.00	40.30	75.00	37.40
812	64.40	84.20	93.20	97.80	68.40	85.80	73.60	90.20	71.80	86.80	41.20	44.80
813	82.60	79.60	85.40	80.80	77.10	75.60	86.70	76.90	80.00	76.70	43.80	67.30
814	85.80	78.80	89.90	91.90	66.50	95.00	92.20	88.50	86.30*	96.70*	91.30*	92.20*
816	89.90	93.20	96.20	92.70	90.00	94.30	99.00	92.60	40.20	85.00	17.90	21.60
817	69.29	68.53	57.23	74.74	58.86	68.24	57.14	83.62	59.36	65.72	49.58	58.98
818	66.50	86.90	70.10	93.40	65.50	91.20	47.70	89.00	67.20	90.80	59.30	80.40
819	120.29*	124.89	124.22*	137.16	124.98*	126.61	124.79	130.03	92.10	119.93	124.91*	145.37*
820	78.00	77.10	91.10	82.80	49.80	*	89.60	88.10	59.20	88.00	19.30	43.50
823	82.40	91.20	99.80	101.00	84.00	105.00	81.80	89.20	68.20	88.20	38.00	60.20

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE A-24.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 6

RAW DATA FOR AROCLOR 1260 ANALYSIS BY WATER TYPE

LOW YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	4	3	4	3	4	3	4	3	4	3	4	3
TRUE VALUE UG/L	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83	42.41	36.83
LABORATORY NUMBER												
801	76.10*	41.60*	52.50*	39.90*	42.40	42.60	126.00*	63.40*	35.90	34.60	15.00	17.90
802	19.80	25.10	23.60	25.30	29.00	24.10	27.30	22.40	26.40	20.80	21.90	18.30
803	20.20	22.00	32.80	23.00	26.50	21.90	24.10	19.60	23.10	20.30	19.80	21.30
804	26.70	24.70	31.90	14.70	24.60*	21.90*	21.00	11.50	19.90	14.50	4.56	8.93
805	34.00	24.40	35.10	46.00	40.40	59.20	31.10	22.50	34.60	31.10	19.60	22.10
806	2057.00*	604.00*	1218.00*	770.00*	386.00*	419.00*	1620.00*	310.00*	292.00*	253.00*	260.00*	210.00*
807	36.20	33.40	35.20	27.80	39.50	36.00	41.40	32.10	18.70	30.40	2.23*	1.92*
808	20.34	17.44	23.51*	22.30*	20.87*	21.08*	13.38*	11.76*	11.78*	9.93*	1.53*	1.99*
809	40.10	30.50	29.70	25.40	36.90	29.80	43.80	37.40	39.40	30.00	22.70	18.00
810	*	5.64*	4.73*	4.09*	8.64*	5.90*	3.91*	4.63*	3.64*	3.38*	2.27*	3.64*
811	48.50	31.70	41.60	30.80	42.40	26.90	47.00	24.00	39.60	26.00	48.10	29.00
812	38.10	32.10	44.40	41.50	36.50	35.80	40.20	40.10	29.20	29.70	23.40	17.00
813	26.80	24.80	22.40	24.20	24.90	21.20	25.20	22.30	24.30	20.90	25.30	20.50
814	74.60*	65.80*	71.50*	67.90*	70.80*	66.30*	65.00	49.20	41.30*	67.10*	1.73	35.50
816	36.60	29.80	52.40	43.20	55.60	51.20	45.30	43.80	41.70	46.50	4.16*	3.17*
817	40.31	32.89	42.04	32.70	*	34.98	40.83	38.23	32.41	32.27	35.14	26.11
818	33.90	30.40	34.10	31.20	36.50	28.80	35.00	27.70	33.60	29.10	31.10	25.40
819	40.54	25.73	49.37	42.59	41.09	32.69	38.52	31.78	35.49	27.63	31.58*	29.28*
820	31.60	22.30	46.20	34.30	46.90	35.10	64.60	31.20	1.00*	27.60	5.68	4.50
823	34.80	33.90	35.40	38.10	37.50	37.50	38.10	35.40	36.90	27.00	24.30	27.90

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

RAW DATA FOR AROCLOR 1260 ANALYSIS BY WATER TYPE

MEDIUM YOUDEN PAIR	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
	1	2	1	2	1	2	1	2	1	2	1	2
TRUE VALUE UG/L	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50	127.22	110.50
LABORATORY NUMBER												
801	129.00*	107.00*	192.00*	149.00*	123.00	106.00	133.00*	119.00*	151.00	121.00	116.00	89.70
802	72.30	42.70	78.50	83.30	98.10	79.50	84.60	67.50	76.60	67.50	60.90	53.90
803	53.00	38.70	92.50	78.40	85.00	74.50	88.00	68.00	79.00	68.00	85.00	63.20
804	44.60	28.90	13.90	29.50	38.70*	40.60*	63.30	37.50	86.90	63.40	24.60	49.00
805	52.50	89.50	119.00	136.00	134.00	111.00	97.50	107.00	128.00	133.00	38.00	92.40
806	811.00*	622.00*	886.00*	929.00*	326.00*	1080.00*	249.00*	673.00*	856.00*	748.00*	908.00*	556.00*
807	96.00	90.90	97.20	83.50	103.50	90.30	107.30	107.50	92.90	60.50	15.70*	7.56*
808	60.19	45.41	49.86*	41.76*	51.08*	57.57*	62.43*	31.35*	64.05*	31.35*	31.21*	20.27*
809	112.00	107.00	103.00	69.80	92.40	110.00	103.00	127.00	99.60	87.40	51.20	64.90
810	*	25.90*	10.00*	13.20*	55.90*	23.60*	16.90*	23.20*	9.32*	*	3.82*	3.54*
811	53.00	90.50	53.00	92.00	50.10	86.00	47.00	87.00	44.00	84.00	46.00	86.00
812	102.00	88.80	123.00	114.00	113.00	110.00	112.00	111.00	106.00	88.90	69.80	60.10
813	92.50	83.10	95.30	75.70	97.40	70.20	91.60	65.90	92.70	76.60	57.50	72.20
814	126.00*	137.00*	157.00*	141.00*	154.00*	144.00*	107.00	135.00	152.00*	150.00*	154.00	120.00
816	138.00	75.00	137.00	76.50	142.00	119.00	136.00	118.00	113.00	112.00	27.60*	18.10*
817	96.11	99.49	122.34	117.41	130.84	116.32	123.91	116.25	141.73	111.85	97.87	102.54
818	108.00	94.70	109.00	102.00	112.00	90.00	112.00	103.00	110.00	104.00	100.00	92.70
819	148.49	117.97	177.00	128.98	157.95	130.06	102.04	109.43	163.99	114.25	157.07*	120.57*
820	33.50	347.00*	132.00	121.00	62.00	109.00	146.00	129.00	91.00	95.00	34.70	*
823	63.00	71.10	69.60	62.10	72.30	73.20	72.30	72.90	69.90	69.60	66.00	66.90

* = REJECTED

WATER LEGEND

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 6

RAW DATA FOR AROCLOR 1260 ANALYSIS BY WATER TYPE

	WATER 1		WATER 2		WATER 3		WATER 4		WATER 5		WATER 6	
HIGH YOUDEN PAIR	6	5	6	5	6	5	6	5	6	5	6	5
TRUE VALUE UG/L	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99	254.45	220.99
LABORATORY NUMBER												
801	948.00*	206.00*	372.00*	484.00*	331.00	328.00	307.00*	245.00*	2755.00*	188.00	178.00	103.00
802	157.00	148.00	159.00	117.00	180.00	*	175.00	143.00	126.00	145.00	134.00	70.10
803	162.00	74.00	184.00	172.00	195.00	163.00	191.00	146.00	200.00	156.00	159.00	140.00
804	150.00	97.60	134.00	142.00	188.00*	96.40*	179.00	171.00	28.00	63.70	57.40	31.50
805	*	146.00	215.00	211.00	195.00	220.00	176.00	143.00	229.00	244.00	112.00	53.40
806	1532.00*	2107.00*	1534.00*	1384.00*	2510.00*	2507.00*	1495.00*	1660.00*	2060.00*	201.00*	809.00*	1200.00*
807	183.90	165.50	163.30	167.10	167.70	177.10	192.00	177.60	145.70	144.50	50.23*	26.59*
808	172.70	65.67	162.16*	61.16*	151.89*	72.97*	168.50*	59.32*	162.16*	44.99*	18.65*	6.08*
809	186.00	85.50	195.00	130.00	218.00	189.00	216.00	151.00	203.00	174.00	117.00	93.00
810	66.80*	26.80*	38.30*	48.60*	134.00*	56.40*	70.40*	68.60*	76.50*	51.40*	58.30*	11.80*
811	83.10	100.00	80.10	98.00	77.20	89.00	84.00	82.00	74.70	86.70	76.00	94.00
812	233.00	168.00	251.00	213.00	232.00	193.00	246.00	220.00	243.00	199.00	115.00	91.70
813	146.80	140.60	85.20	157.40	170.50	104.50	161.30	130.80	158.30	157.40	79.80	81.50
814	287.00*	261.00*	262.00*	250.00*	248.00*	257.00*	243.00	250.00	345.00*	253.00*	203.00	180.00
816	288.00	253.00	274.00	261.00	232.00	245.00	315.00	241.00	334.00	230.00	17.30*	27.20*
817	242.64	183.48	271.23	235.89	253.56	244.73	264.25	242.31	254.68	223.65	281.66	211.34
818	190.00	204.00	201.00	216.00	200.00	214.00	181.00	197.00	194.00	198.00	179.00	181.00
819	183.25	211.39	253.75	228.66	238.16	244.23	228.55	204.19	227.08	229.88	264.38*	211.93*
820	159.00	118.00	276.00	113.00	297.00	165.00	213.00	142.00	201.00	216.00	61.80	7.71
823	232.00	166.00	202.00	169.00	224.00	174.00	221.00	131.00	241.00	180.00	132.00	138.00

* = REJECTED

WATER LEGEND

1 - DISTILLED WATER
2 - TAP WATER
3 - SURFACE WATER
4 - WASTE WATER 1
5 - WASTE WATER 2
6 - WASTE WATER 3

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TABLE B-1.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON ALDRIN ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE(GAMMA(1)) = .97345

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0407	.0148
3	.0078	.0072
4	-.0274	-.0215
5	-.1734	.0481
6	-1.3340	.1740

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	258.06954	258.06954		
REG(WATER/DISTILLED)	10	79.24583	7.92458	61.71	.0000
ERROR	485	62.28424	.12842		
TOTAL	496	399.59962			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0407	(-.3105 , .2290)	.0148	(-.1993 , .2289)
3	.0078	(-.2638 , .2794)	.0072	(-.2068 , .2211)
4	-.0274	(-.3051 , .2504)	-.0215	(-.2391 , .1961)
5	-.1734	(-.4515 , .1047)	.0481	(-.1700 , .2662)
6	-1.3340	(-1.6215 , -1.0466)	.1740	(-.0501 , .3981)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-2.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON ALPHA-BHC ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .96811

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0330	-.0204
3	.0067	-.0286
4	.1072	-.1041
5	-.0158	.0004
6	-.3225	.0356

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	310.11542	310.11542		
REG(WATER/DISTILLED)	10	7.25731	.72573	11.94	.0000
ERROR	479	29.11943	.06079		
TOTAL	490	346.49215			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	.0330	-.0878	.1538)	-.0204	-.1487	.1080)
3	.0067	-.1175	.1308)	-.0286	-.1597	.1024)
4	.1072	-.0116	.2261)	-.1041	-.2287	.0204)
5	-.0158	-.1386	.1070)	.0004	-.1291	.1298)
6	-.3225	-.4489	-.1961)	.0356	-.0950	.1662)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-3.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON BETA-BHC ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .94148

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1103	-.0140
3	.0399	.0007
4	.0471	-.0021
5	-.0044	.0287
6	-.2562	.0549

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	348.07026	348.07026		
REG(WATER/DISTILLED)	10	4.01552	.40155	7.27	.0000
ERROR	491	27.13563	.05527		
TOTAL	502	379.22141			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.1103	(-.0432 , .2638)	-.0140	(-.1271 , .0992)
3	.0399	(-.1155 , .1953)	.0007	(-.1131 , .1145)
4	.0471	(-.1056 , .1998)	-.0021	(-.1140 , .1098)
5	-.0044	(-.1571 , .1484)	.0287	(-.0826 , .1400)
6	-.2562	(-.4193 , -.0931)	.0549	(-.0627 , .1724)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

TABLE B-4.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON GAMMA-BHC ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.09572

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0290	-.0482
3	.0368	-.0232
4	.0990	-.0855
5	.0048	-.0084
6	-.2443	-.0316

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	320.46613	320.46613		
REG(WATER/DISTILLED)	10	5.80437	.58044	7.08	.0000
ERROR	496	40.66508	.08199		
TOTAL	507	366.93558			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.0290	(-.0991 , .1571)	-.0482	(-.2091 , .1129)
3	.0368	(-.0942 , .1677)	-.0232	(-.1863 , .1399)
4	.0990	(-.0322 , .2303)	-.0855	(-.2482 , .0772)
5	.0048	(-.1309 , .1405)	-.0084	(-.1770 , .1603)
6	-.2443	(-.3781 , -.1104)	-.0316	(-.1981 , .1350)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-5.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON DELTA-BHC ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .96142

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0117	.0243
3	-.0418	.0404
4	-.0232	-.0201
5	-.0615	.0672
6	-.3632	.0926

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	279.13902	279.13902		
REG(WATER/DISTILLED)	10	4.91205	.49120	5.26	.0000
ERROR	520	48.54291	.09335		
TOTAL	531	332.59398			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	-.0117	(-.2295 ,	.2062)	.0243	(-.1474 ,	.1960)
3	-.0418	(-.2593 ,	.1756)	.0404	(-.1299 ,	.2107)
4	-.0232	(-.2438 ,	.1974)	-.0201	(-.1931 ,	.1528)
5	-.0615	(-.2900 ,	.1670)	.0672	(-.1113 ,	.2457)
6	-.3632	(-.5981 ,	-.1284)	.0926	(-.0910 ,	.2762)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-6.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON 4,4 -DDD ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE=GAMMA(1) = .93730

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0227	.0078
3	-.0960	.0485
4	-.0607	.0554
5	-.1080	.0268
6	-.7895	.0890

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	359.08532	359.08532		
REG(WATER/DISTILLED)	10	32.38384	3.23838	38.67	.0000
ERROR	544	45.55597	.08374		
TOTAL	555	437.02513			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.0227	(-.2740 , .3193)	.0078	(-.1358 , .1514)
3	-.0960	(-.3966 , .2046)	.0485	(-.0961 , .1931)
4	-.0607	(-.3610 , .2397)	.0554	(-.0887 , .1996)
5	-.1080	(-.4069 , .1909)	.0268	(-.1167 , .1703)
6	-.7895	(-1.0839 , -.4950)	.0890	(-.0517 , .2297)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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BOTTOM OF IMAGE AREA, OUTSIDE DIMENSION FOR TABLES AND ILLUSTRATIONS
TOP OF IMAGE AREA

TABLE B-7.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON 4,4 -DDE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .95462

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0176	.0026
3	-.0021	.0037
4	-.0056	.0195
5	-.1448	.0011
6	-.9580	.1767

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	315.87708	315.87708		
REG(WATER/DISTILLED)	10	35.30497	3.53050	45.41	.0000
ERROR	512	39.80439	.07774		
TOTAL	523	390.98644			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	.0176	-.2262	.2615)	.0026	-.1474	.1525)
3	-.0021	-.2478	.2436)	.0037	-.1461	.1534)
4	-.0056	-.2472	.2359)	.0195	-.1277	.1668)
5	-.1448	-.3910	.1013)	.0011	-.1493	.1514)
6	-.9590	-1.2065	-.7094)	.1767	.0265	.3268)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-8.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON 4,4 -DDT ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.00948

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0135	.0026
3	.0009	.0040
4	.0320	-.0026
5	-.1832	.0117
6	-1.2270	.1927

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	258.03976	258.03976		
REG(WATER/DISTILLED)	10	46.45586	4.64559	41.58	.0000
ERROR	515	57.53870	.11173		
TOTAL	526	362.03432			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.0135	(-.4556 , .4826)	.0026	(-.2053 , .2106)
3	.0009	(-.4688 , .4706)	.0040	(-.2043 , .2124)
4	.0320	(-.4366 , .5005)	-.0026	(-.2106 , .2054)
5	-.1832	(-.6557 , .2892)	.0117	(-.1968 , .2201)
6	-1.2270	(-1.7021 , -.7519)	.1927	(-.0161 , .4015)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-9.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE IN DIELDRIN ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.00204

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.1313	.0553
3	-.0002	-.0191
4	.0594	-.0449
5	-.0570	.0172
6	-.5492	.0122

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	332.66279	332.66279		
REG(WATER/DISTILLED)	10	15.71806	1.57181	21.18	.0000
ERROR	469	34.80439	.07421		
TOTAL	480	383.18524			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.1313	(-.3579 , .0953)	.0553	(-.0906 , .2012)
3	-.0002	(-.2213 , .2208)	-.0191	(-.1615 , .1233)
4	.0594	(-.1648 , .2837)	-.0449	(-.1904 , .1007)
5	-.0570	(-.2904 , .1763)	.0172	(-.1340 , .1683)
6	-.5492	(-.7819 , -.3164)	.0122	(-.1372 , .1617)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-10.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SOI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON ENDOSULFAN I ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .98658

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0319	.0151
3	.1257	-.0681
4	.0567	-.0239
5	-.1351	.0305
6	-.6547	.0182

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	358.82723	358.82723		
REG(WATER/DISTILLED)	10	27.36215	2.73621	23.59	.0000
ERROR	482	55.90244	.11598		
TOTAL	493	442.09181			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	-.0319	(-.3257 , .2619)	.0151	(-.1566 , .1867)
3	.1257	(-.1598 , .4112)	-.0681	(-.2364 , .1003)
4	.0567	(-.2372 , .3505)	-.0239	(-.1983 , .1505)
5	-.1351	(-.4213 , .1510)	.0305	(-.1392 , .2003)
6	-.6547	(-.9434 , -.3661)	.0182	(-.1518 , .1881)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-11.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SPI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON ENDOSULFAN II ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .90699

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.3255	.1527
3	-.1964	.1288
4	-.0297	.0606
5	-.1596	.0802
6	-.4194	-.0052

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	208.00818	208.00818		
REG(WATER/DISTILLED)	10	13.95717	1.39572	8.44	.0000
ERROR	475	78.51809	.16530		
TOTAL	486	300.48343			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.3255	(-.8098 , .1588)	.1527	(-.1137 , .4191)
3	-.1964	(-.6893 , .2964)	.1288	(-.1427 , .4004)
4	-.0297	(-.4990 , .4396)	.0606	(-.1966 , .3178)
5	-.1596	(-.6586 , .3393)	.0802	(-.1956 , .3561)
6	-.4194	(-.9114 , .0725)	-.0052	(-.2732 , .2628)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-12.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES.PCBS 1

EFFECT OF WATER TYPE ON ENDOSULFAN SULFATE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.07626

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.1655	-.0605
3	-.0690	.0103
4	-.0512	.0061
5	.0753	-.0784
6	-.0316	-.1063

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	278.34567	278.34567		
REG(WATER/DISTILLED)	10	5.54212	.55421	4.59	.0000
ERROR	448	54.11151	.12078		
TOTAL	459	337.99930			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.1655	(-.3670 , .6979)	-.0605	(-.2713 , .1503)
3	-.0690	(-.6037 , .4657)	.0103	(-.2004 , .2209)
4	-.0512	(-.5737 , .4713)	.0061	(-.2001 , .2124)
5	.0753	(-.4635 , .6142)	-.0784	(-.2905 , .1336)
6	-.0316	(-.5528 , .4895)	-.1063	(-.3111 , .0985)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-13.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON ENDRIN ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = 1.02679

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.2183	-.0712
3	.3297	-.1245
4	.2390	-.0599
5	.1464	-.0371
6	-.4200	-.0540

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	360.39008	360.39008		
REG(WATER/DISTILLED)	10	25.01259	2.50126	9.75	.0000
ERROR	503	128.97979	.25642		
TOTAL	514	514.38147			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	.2183	(-.3359 , .7725)	-.0712	(-.3313 , .1989)
3	.3297	(-.1978 , .8572)	-.1245	(-.3713 , .1224)
4	.2390	(-.2921 , .7701)	-.0599	(-.3090 , .1992)
5	.1464	(-.3979 , .6908)	-.0371	(-.2909 , .2167)
6	-.4200	(-.9826 , .1426)	-.0540	(-.3157 , .2076)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-14.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 2

EFFECT OF WATER TYPE ON HEPTACHLOR ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .95921

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0261	.1195
3	.0548	.0170
4	-.0143	.0605
5	-.1573	.0138
6	-1.2763	.0328

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	294.13958	284.13958		
REG(WATER/DISTILLED)	10	98.68819	9.86882	42.48	.0000
ERROR	498	115.69140	.23231		
TOTAL	509	498.51917			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	.0261	(-.1830 ,	.2353)	.1195	(-.1556 ,	.3945)
3	.0548	(-.1582 ,	.2679)	.0170	(-.2662 ,	.3001)
4	-.0143	(-.2287 ,	.2000)	.0605	(-.2186 ,	.3397)
5	-.1573	(-.3710 ,	.0565)	.0138	(-.2678 ,	.2954)
6	-1.2763	(-1.5019 ,	-1.0506)	.0328	(-.2630 ,	.3285)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-15.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 1

EFFECT OF WATER TYPE ON HEPTACHLOR EPOXIDE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .94076

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0594	.0303
3	-.0524	.0029
4	-.0312	-.0022
5	-.0565	.0189
6	-.6838	.1080

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	311.92543	311.92543		
REG(WATER/DISTILLED)	10	19.64893	1.96489	39.36	.0000
ERROR	526	26.26157	.04993		
TOTAL	537	357.83592			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	-.0594	(-.2116 ,	.0928)	.0303	(-.0867 ,	.1473)
3	-.0524	(-.2067 ,	.1019)	.0029	(-.1158 ,	.1217)
4	-.0312	(-.1826 ,	.1202)	-.0022	(-.1192 ,	.1148)
5	-.0565	(-.2081 ,	.0951)	.0189	(-.0979 ,	.1356)
6	-.6838	(-.8420 ,	-.5257)	.1080	(-.0112 ,	.2271)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-16.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 3

EFFECT OF WATER TYPE ON CHLORDANE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .99559

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.1516	.0184
3	-.1932	.0466
4	.0090	-.0252
5	-.0471	-.0173
6	-.5234	-.0570

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	284.44311	284.44311		
REG(WATER/DISTILLED)	10	28.75494	2.87549	28.21	.0000
ERROR	534	54.43974	.10195		
TOTAL	545	367.63779			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.1516	(-.7431 , .4398)	.0184	(-.1593 , .1962)
3	-.1932	(-.7977 , .4113)	.0466	(-.1354 , .2287)
4	.0090	(-.5934 , .6115)	-.0252	(-.2061 , .1556)
5	-.0471	(-.6747 , .5805)	-.0173	(-.2052 , .1707)
6	-.5234	(-1.1490 , .1022)	-.0570	(-.2452 , .1311)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

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EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 4

EFFECT OF WATER TYPE IN TOXAPHENE ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .99659

WATER*	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0306	-.0001
3	.0805	-.0198
4	-.0593	.0082
5	.0238	-.0299
6	-.4217	-.0460

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	354.74043	354.74043		
REG(WATER/DISTILLED)	10	21.90143	2.19014	32.28	.0000
ERROR	535	36.29493	.06784		
TOTAL	546	412.93678			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERCEPT(WATER-DISTILLED) INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	SLOPE(WATER-DISTILLED) INTERVAL
2	.0306	(-.6292 , .6904)	-.0001	(-.1310 , .1307)
3	.0805	(-.5815 , .7424)	-.0198	(-.1512 , .1116)
4	-.0593	(-.7289 , .6103)	.0082	(-.1246 , .1410)
5	.0238	(-.6400 , .6876)	-.0299	(-.1614 , .1016)
6	-.4217	(-1.1325 , .2891)	-.0460	(-.1870 , .0950)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 8

EFFECT OF WATER TYPE ON AROCLOR 1016 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .97788

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0727	.0289
3	.0400	-.0096
4	.0497	-.0101
5	.0588	-.0325
6	-.1833	-.0674

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	296.91721	296.91721		
REG(WATER/DISTILLED)	10	12.06529	1.20653	19.51	.0000
ERROR	498	30.80011	.06185		
TOTAL	509	339.78260			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0727	(-.5643 , .4188)	.0289	(-.1064 , .1642)
3	.0400	(-.4546 , .5346)	-.0096	(-.1456 , .1264)
4	.0497	(-.4336 , .5329)	-.0101	(-.1438 , .1236)
5	.0588	(-.4275 , .5452)	-.0325	(-.1669 , .1018)
6	-.1833	(-.6668 , .3003)	-.0674	(-.2005 , .0658)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

EFFECT OF WATER TYPE ON AROCLOR 1221 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .93940

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0029	-.0126
3	.0299	-.0208
4	-.0054	.0119
5	-.0182	-.0214
6	-.5772	.0240

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	270.87537	270.87537		
REG(WATER/DISTILLED)	10	15.01540	1.50154	9.86	.0000
ERROR	524	79.79182	.15227		
TOTAL	535	365.68259			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0029	(-.9240 , .9181)	-.0126	(-.2301 , .2049)
3	.0299	(-.8850 , .9448)	-.0208	(-.2373 , .1957)
4	-.0054	(-.9239 , .9131)	.0119	(-.2057 , .2294)
5	-.0182	(-.9331 , .8966)	-.0214	(-.2379 , .1951)
6	-.5772	(-1.5052 , .3508)	.0240	(-.1946 , .2427)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

FOR COMPLETE DETAILS ON INTERPRETING THIS REPORT, SEE APPENDIX A IN THE PROGRAMMER(S) DOCUMENTATION.

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TABLE B-20.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES, PCBS 6

EFFECT OF WATER TYPE ON AROCLOR 1232 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .87891

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.3530	.0632
3	-.3509	.0739
4	.0812	-.0333
5	-.0068	-.0338
6	-.7426	.0334

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	232.56757	232.56757		
REG(WATER/DISTILLED)	10	19.45045	1.94505	11.97	.0000
ERROR	502	81.59091	.16253		
TOTAL	513	333.60894			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	-.3530	(-1.3085 ,	.6025)	.0632	(-.1623 ,	.2886)
3	-.3509	(-1.3130 ,	.6113)	.0739	(-.1534 ,	.3013)
4	.0812	(-.8709 ,	1.0333)	-.0333	(-.2581 ,	.1914)
5	-.0068	(-.9409 ,	.9273)	-.0338	(-.2548 ,	.1872)
6	-.7426	(-1.7069 ,	.2217)	.0334	(-.1946 ,	.2615)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-21.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

EFFECT OF WATER TYPE ON AROCLOR 1242 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .98935

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0144	.0198
3	.0200	-.0114
4	.0946	-.0070
5	-.0273	.0107
6	-.7887	.0637

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	363.16620	363.16620		
REG(WATER/DISTILLED)	10	24.81500	2.48150	31.15	.0000
ERROR	525	41.81768	.07965		
TOTAL	536	429.79888			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0144	(-.5462 , .5173)	.0198	(-.1272 , .1669)
3	.0200	(-.5029 , .5430)	-.0114	(-.1565 , .1337)
4	.0946	(-.4260 , .6153)	-.0070	(-.1512 , .1373)
5	-.0273	(-.5599 , .5053)	.0107	(-.1371 , .1584)
6	-.7887	(-1.3259 , -.2514)	.0637	(-.0860 , .2133)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 7

EFFECT OF WATER TYPE ON AROCLOR 1248 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .95789

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0516	.0004
3	-.0313	-.0122
4	-.1001	.0166
5	-.0311	-.0215
6	-1.0514	.0706

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	358.99184	358.99184		
REG(WATER/DISTILLED)	10	38.23281	3.82328	32.36	.0000
ERROR	552	65.21589	.11814		
TOTAL	563	462.44054			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0516	(-.7105 , .6073)	.0004	(-.1679 , .1685)
3	-.0313	(-.7067 , .6441)	-.0122	(-.1844 , .1600)
4	-.1001	(-.7545 , .5543)	.0166	(-.1502 , .1833)
5	-.0311	(-.6708 , .6086)	-.0215	(-.1849 , .1419)
6	-1.0514	(-1.7237 , -.3792)	.0706	(-.0999 , .2411)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-23.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
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ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

EFFECT OF WATER TYPE ON AROCLOR 1254 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .94869

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	-.0476	.0236
3	-.0546	.0131
4	-.3920	.1084
5	-.5335	.1080
6	-1.1560	.1357

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	277.41560	277.41560		
REG(WATER/DISTILLED)	10	31.02078	3.10208	36.75	.0000
ERROR	563	47.52932	.08442		
TOTAL	574	355.96570			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL	SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL
2	-.0476	(-.7099 , .6147)	.0236	(-.1450 , .1922)
3	-.0546	(-.7039 , .5947)	.0131	(-.1527 , .1788)
4	-.3920	(-1.0519 , .2678)	.1084	(-.0598 , .2766)
5	-.5335	(-1.1952 , .1283)	.1080	(-.0604 , .2765)
6	-1.1560	(-1.8418 , -.4702)	.1357	(-.0392 , .3106)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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TABLE B-24.

ENVIRONMENTAL MONITORING AND SUPPORT LABORATORY
OFFICE OF RESEARCH AND DEVELOPMENT
ENVIRONMENTAL PROTECTION AGENCY

EPA METHOD VALIDATION STUDY-SRI PESTICIDES,PCBS 5

EFFECT OF WATER TYPE ON AROCLOR 1260 ANALYSIS

** POINT ESTIMATES **

DISTILLED WATER SLOPE:GAMMA(1) = .92310

WATER	INTERCEPT(WATER-DISTILLED)	SLOPE(WATER-DISTILLED)
2	.0917	.0062
3	.0571	.0192
4	-.0274	.0333
5	-.2934	.0752
6	-.6876	.0697

** ANALYSIS OF VARIANCE **

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F	PROB
REG(DISTILLED)	1	273.79606	273.79606		
REG(WATER/DISTILLED)	10	15.23714	1.52371	14.32	.0000
ERROR	516	54.91680	.10643		
TOTAL	527	343.95000			

** TABLE OF 95% CONFIDENCE INTERVALS FOR THE DIFFERENCES BETWEEN INTERCEPTS AND THE DIFFERENCES BETWEEN SLOPES **

WATER	INTERCEPT(WATER-DISTILLED) ESTIMATE	INTERVAL		SLOPE(WATER-DISTILLED) ESTIMATE	INTERVAL	
2	.0917	(-.7640 ,	.9473)	.0062	(-.1760 ,	.1884)
3	.0571	(-.8053 ,	.9195)	.0192	(-.1644 ,	.2028)
4	-.0274	(-.8694 ,	.8146)	.0333	(-.1460 ,	.2126)
5	-.2934	(-1.1424 ,	.5555)	.0752	(-.1056 ,	.2559)
6	-.6876	(-1.5594 ,	.1841)	.0697	(-.1158 ,	.2552)

NOTE: IF ZERO IS CONTAINED WITHIN A GIVEN CONFIDENCE INTERVAL THEN THERE IS NO STATISTICAL SIGNIFICANCE BETWEEN DISTILLED WATER AND THE CORRESPONDING WASTE WATER FOR THE ASSOCIATED PARAMETER(INTERCEPT/SLOPE).

THE SLOPE AND INTERCEPT ESTIMATES FROM THIS ANALYSIS ARE NOT THE SAME AS THOSE OBTAINED FROM THE PRECISION AND ACCURACY REGRESSIONS PERFORMED EARLIER.

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APPENDIX C

ORGANOCHLORINE PESTICIDES AND PCB's

METHOD 608

1. Scope and Application

1.1 This method covers the determination of certain organochlorine pesticides and polychlorinated biphenyls (PCBs). The following parameters may be determined by this method:

Parameter	STORET No.	Parameter	STORET No.
Aldrin	39330	Endrin	39390
a-BHC	39337	Endrin Aldehyde	34366
b-BHC	39338	Heptachlor	39410
d-BHC	39340	Heptachlor Epoxide	39420
g-BHC	34259	Toxaphene	39400
Chlordane	39350	PCB-1016	34671
4,4'-DDD	39310	PCB-1221	39488
4,4'-DDE	39320	PCB-1232	39492
4 4'-DDT	39300	PCB-1242	39496
Dieldrin	39380	PCB-1248	39500
Endosulfan I	34361	PCB-1254	39504
Endosulfan II	34356	PCB-1260	39508
Endosulfan Sulfate	34351		

1.2 This method is applicable to the determination of these compounds in municipal and industrial discharges. It is designed to be used to meet the monitoring requirements of the National Pollutant Discharge Elimination System (NPDES). As such, it presupposes a

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high expectation of finding the specific compounds of interest. If the user is attempting to screen samples for any or all of the compounds above, he must develop independent protocols for the verification of identity.

1.3 The sensitivity of this method is usually dependent upon the level of interferences rather than instrumental limitations. The limits of detection listed in Table I represent sensitivities that can be achieved in wastewaters.

1.4 This method is recommended for use only by experienced residue analysts or under the close supervision of such qualified persons.

2. Summary of Method

2.1 A 1-liter sample of wastewater is extracted with methylene chloride using separatory funnel techniques. The extract is dried and concentrated to a volume of 10 ml or less. Chromatographic conditions are described which allow for the accurate measurement of the compounds in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. Interferences

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation

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in all-glass systems may be required.

3.2 Interferences coextracted from the samples will vary considerably from source to source, depending upon the diversity of the industrial complex or municipality being sampled. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivities stated in Table 1.

3.3 Glassware must be scrupulously clean. Clean as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing in hot water. Rinse with tap water, distilled water, acetone and finally pesticide quality hexane. Heavily contaminated glassware may require treatment in a muffle furnace at 400°C for 15 to 30 minutes. Some high boiling materials, such as PCBs, may not be eliminated by this treatment. Volumetric ware should not be heated in a muffle furnace. Glassware should be stored immediately after drying or cooling to prevent any accumulation of dust or other contaminants. Store inverted or capped with aluminum foil.

3.4 Interferences by phthalate esters can pose a problem in the 15% and 50% fractions from the Florisil fractionation. These interferences can be minimized by avoiding contact with any plastic materials. The presence of phthalate esters is indicated in samples that respond to electron capture detectors but not to microcoulometric or electrolytic conductively (halogen mode) detectors.

4. Apparatus and Materials

4.1 Sampling equipment, for discrete or composite sampling.

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4.1.1 Grab sample bottle - amber glass, liter or quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2 Bottle caps - Threaded to screw on sample bottles. Caps must be lined with Teflon. Foil may be substituted if sample is not corrosive.

4.1.3 Compositing equipment - Automatic or manual compositing system. Must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated during sampling. No tygon or rubber tubing or fittings may be used in the system.

4.2 Separatory funnel - 2000 ml, with Teflon stopcock.

4.3 Drying column - A 20 mm ID pyrex chromatographic column with coarse frit.

4.4 Kuderna-Danish (K-D) Apparatus

4.4.1 Concentrator tube - 10 ml, graduated (Kontes K-570050-1025 or equivalent). Calibration must be checked at 1.0 and 10.0 ml level. Ground glass stopper (size 19/22 joint) is used to prevent evaporation of extracts.

4.4.2 Evaporative flask - 500 ml (Kontes K-57001-0500 or equivalent). Attach to concentrator tube with springs. (Kontes K-662750-0012).

4.4.3 Snyder column - three-ball macro (Kontes K503000-0121 or equivalent).

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4.4.4 Boiling chips-extracted, approximately 10/40 mesh.

4.5 Water bath - Heated, with concentric ring cover, capable of temperature control (± 2°C). The bath should be used in a hood.

4.6 Gas chromatograph - Analytical system complete with gas chromatograph suitable for on-column injection and all required accessories including electron capture or halogen-specific detector, column supplies, recorder, gases, syringes. A data system for measuring peak areas is recommended.

4.7 Chromatographic column - Pyrex, 400 mm x 25 mm OD, with coarse fritted plate and Teflon stopcock (Kontes K-42054-213 or equivalent).

5. Reagents

5.1 Preservatives:

5.1.1 Sodium hydroxide - (ACS) 10 N in distilled water.

5.1.2 Sulfuric acid - (ACS) Mix equal volumes of conc. H_2SO_4 with distilled water.

5.2 Methylene chloride - Pesticide quality or equivalent.

5.3 Sodium Sulfate - (ACS) Granular, anhydrous (purified by heating at 400°C for 4 hrs.).

5.4 Stock standards - Prepare stock standard solutions at a concentration of 1.00 ug/ul by dissolving 0.100 grams of assayed reference material in pesticide quality isooctane or other appropriate solvent and diluting to volume in a 100 ml ground glass stoppered volumetric flask. The stock solution is transferred to ground glass stoppered reagent bottles, stored in a refrigerator, and checked frequently for signs of degradation or evaporation,

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especially just prior to preparing working standards from them.

5.5 Boiling chips, Hengar granules (Hengar Co.; Fisher Co.) or equivalent.

5.6 Mercury, triple distilled.

5.7 Aluminum oxide, basic or neutral, active.

5.8 Hexane, pesticide residue analysis grade.

5.9 Isooctane (2,2,4-trimethyl pentane), pesticide residue analysis grade.

5.10 Acetone, pesticide residue analysis grade.

5.11 Diethyl ether, preserved with 2% ethanol.

5.11.1 Must be free of peroxides as indicated by EM Quant test strips (EM Laboratories, Inc., 500 Executive Blvd., Elmsford, N.Y.. 10523).

5.11.2 If test indicates, remove peroxides by eluting over basic or neutral grade aluminum oxide. Retest before using.

5.12 Florisil - PR grade (60/100 mesh); purchase activated at 1250°F and store in glass containers with glass stoppers or foil-lined screw caps. Before use activate each batch at least 16 hours at 130°C in a foil covered glass container.

6. Calibration

6.1 Prepare calibration standards that contain the compounds of interest, either singly or mixed together. The standards should be prepared at concentrations covering two or more orders of magnitude that will completely bracket the working range of the chromatographic system. If the sensitivity of the detection system can be calculated from Table I as 100 ug/l in the final extract,

for example prepare standards at 10 ug/l, 50 ug/l, 100 ug/l, 500 ug/l, etc. so that injections of 1-5 ul of each calibration standard will define the linearity of the detector in the working range.

6.2 Assemble the necessary gas chromatographic apparatus and establish operating parameters equivalent to those indicated in Table I. By injecting calibration standards, establish the sensitivity limit of the detector and the linear range of the analytical system for each compound.

6.3 Before using any cleanup procedure, the analyst must process a series of calibration standards through the system to validate elution patterns and the absence of interferences from the reagents.

7. Quality Control

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted or there is a change in reagents, a method blank should be processed as a safeguard against chronic laboratory contamination.

7.2 Standard quality assurance practices should be used with this method. Field replicates should be collected to validate the precision of the sampling technique. Laboratory replicates should be analyzed to validate the precision of the analysis. Fortified samples should be analyzed to validate the accuracy of the analysis. Where doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as mass spectroscopy

should be used.

8. Sample Collection, Preservation, and Handling

8.1 Grab samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in refrigerated glass containers in accordance with the requirements of the program. Automatic sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If the samples will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0-8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. Sample Extraction

9.1 Mark the water meniscus on the side of the sample bottle for later determination of sample volume. Pour the entire sample into a two-liter separatory funnel. Check the pH with wide-range paper and adjust to within the range of 5-9 with sodium hydroxide or sulfuric acid.

9.2 Add 60 ml methylene chloride to the sample bottle and shake 30 seconds to rinse the walls. Transfer the solvent into the separatory funnel, and extract the sample by shaking the funnel for two minutes with periodic venting to release vapor pressure. Allow

the organic layer to separate from the water phase for a minimum of ten minutes. If the emulsion interface between layers is more than one-third the size of the solvent layer, the analyst must employ mechanical techniques to complete the phase separation. The optimum technique depends upon the sample, but may include stirring, filtration of the emulsion through glass wool, or centrifugation. Collect the methylene chloride extract in a 250-ml Ehrlenmeyer flask.

9.3 Add a second 60-ml volume of methylene chloride to the sample bottle and complete the extraction procedure a second time, combining the extracts in the Ehrlenmeyer flask.

9.4 Perform a third extraction in the same manner. Pour the combined extract through a drying column containing 3-4 inches of anhydrous sodium sulfate, and collect it in a 500-ml Kuderna-Danish (K-D) flask equipped with a 10 ml concentrator tube. Rinse the Ehrlenmeyer flask and column with 20-30 ml methylene chloride to complete the quantitative transfer.

9.5 Add 1-2 clean boiling chips to the flask and attach a three-ball Snyder column. Prewet the Snyder column by adding about 1 ml methylene chloride to the top. Place the K-D apparatus on a steaming hot (60-65°C) water bath so that the concentrator tube is partially immersed in the hot water, and the entire lower rounded surface of the flask is bathed in steam. Adjust the vertical position of the apparatus and the water temperature as required to complete the concentration in 15-20 minutes. At the proper rate of distillation the balls of the column will actively chatter but

the chambers will not flood. When the apparent volume of liquid reaches 1 ml, remove the K-D apparatus and allow it to drain for at least 10 minutes while cooling.

9.6 Increase the temperature of the hot water bath to about 80°C. Momentarily remove the Snyder column, add 50 ml of hexane and a new boiling chip and reattach the Snyder column. Pour about 1 ml of hexane into the top of the Snyder column and concentrate the solvent extract as before. Elapsed time of concentration should be 5 to 10 minutes. When the apparent volume of liquid reaches 1 ml, remove the K-D apparatus and allow it to drain at least 10 minutes while cooling. Remove the Snyder column and rinse the flask and its lower joint into the concentrator tube with 1-2 ml of hexane, and adjust the volume to 10 ml. A 5-ml syringe is recommended for this operation. Stopper the concentrator tube and store refrigerated if further processing will not be performed immediately. If the sample extract requires no further cleanup, proceed with gas chromatographic analysis. If the sample requires cleanup, proceed to Section 10.

9.7 Determine the original sample volume by refilling the sample bottle to the mark and transferring the liquid to a 1000 ml graduated cylinder. Record the sample volume to the nearest 5 ml.

10. Cleanup and Separation

10.1 Cleanup procedures are used to extend the sensitivity of a method by minimizing or eliminating interferences that mask or otherwise disfigure the gas chromatographic response to the pesticides and

PCB's. The Florisil column allows for a select fractionation of the compounds and will eliminate polar materials. Elemental sulfur interfere with the electron capture gas chromatography of certain pesticides and can be removed by the techniques described below.

10.2 Florisil Column Cleanup

10.2.1 Add a weight of Florisil, nominally 21g, but predetermined by calibration, to a chromatographic column. Settle the Florisil by tapping the column. Add sodium sulfate to the top of the Florisil to form a layer 1-2 cm deep. Add 60 ml of hexane to wet and rinse the sodium sulfate and Florisil. Just prior to exposure of the sodium sulfate to air, stop the draining of the hexane by closing the stopcock on the chromatography column. Discard the eluate.

10.2.2 Add the sample extract from the K-D concentrator tube to the Florisil column. Rinse the tube twice with 1-2 ml hexane, adding each rinse to the column.

10.2.3 Place a 500 ml K-D flask and clean concentrator tube under the chromatography column. Drain the column into the flask until the sodium sulfate layer is nearly exposed. Elute the column with 200 ml of 6% ethyl ether in hexane (Fraction 1) using a drip rate of about 5 ml/min. Remove the K-D flask and set aside for later concentration. Elute the column again, using 200 ml of 15% ethyl ether in hexane (Fraction 2), into a second K-D flask. Perform the third elution using 200 ml of 50% ethyl ether in hexane (Fraction 3). The

elution patterns for the pesticides and PCB's are shown in Table II.

10.2.4 Concentrate the eluates by standard K-D techniques (9.5), substituting hexane for methylene chloride and using the water bath at about 85°C. Adjust final volume to 10 ml with hexane. Analyze by gas chromatography.

10.3 Elemental sulfur will usually elute entirely in Fraction 1. To remove sulfur interference from this fraction or the original extract, pipet 1.00 ml of the concentrated extract into a clean concentrator tube or Teflon-sealed vial. Add 1-3 drops of mercury and seal. Agitate the contents of the vial for 15-30 seconds. Place the vial in an upright position on a reciprocal laboratory shaker and shake for 2 hours. Analyze by gas chromatography.

11. Gas Chromatography

11.1 Table I summarizes some recommended gas chromatographic column materials and operating conditions for the instrument. Included in this table are estimated retention times and sensitivities that should be achieved by this method. Examples of the separations achieved by these columns are shown in Figures 1 through 10. Calibrate the system daily with a minimum of three injections of calibration standards.

11.2 Inject 2-5 ul of the sample extract using the solvent-flush technique. Smaller (1.0 ul) volumes can be injected in automatic devices are employed. Record the volume injected to the nearest 0.05 ul, and the resulting peak size, in area units.

11.3 If the peak area exceeds the linear range of the system, dilute the extract and reanalyze.

11.4 If the peak area measurement is prevented by the presence of interferences, further cleanup is required.

12. Calculations

12 1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, ug/l} = \frac{(A)\ (B)\ (V_t)}{(V_i)\ \ (V_s)}$$

where A = Calibration factor for chromatographic system, in nanograms material per area unit.

B = Peak size in injection of sample extract, in area units

V_i = volume of extract injected (ul)

V_t = Volume of total extract (ul)

V_s = Volume of water extracted (ml)

12.2 Report results in micrograms per liter without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

13. Accuracy and Precision

13.1 None available at this time.

BIBLIOGRAPHY

"Development and Application of Test Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10-Pesticides and PCB's." Report for EPA Contract 68-03-2606.

TABLE I

GAS CHROMATOGRAPHY OF PESTICIDES AND PCB's

Parameter	Retention Time (min) Column 1	Column 2	Detection Limit (ug/l)**
Aldrin	2.40	4.10	0.003
a-BHC	1.35	1.82	0.002
b-BHC	1.90	1.97	0.004
d-BHC	2.15	2.20	0.004
g-BHC	1.70	2.13	0.002
Chlordane	*	*	0.04
4,4'-DDD	7.83	9.08	0.012
4,4'-DDE	5.13	7.15	0.006
4,4'-DDT	9.40	11.75	0.016
Dieldrin	5.45	7.23	0.006
Endosulfan I	4.50	6.20	0.005
Endosulfan II	8.00	8.28	0.01
Endosulfan sulfate	14.22	10.70	0.03
Endrin	6.55	8.10	0.009
Endrin aldehyde	11.82	9.30	0.023
Heptachlor	2.00	3.35	0.002
Heptachlor epoxide	3.50	5.00	0.004
Toxaphene	*	*	0.40
PCB-1016	*	*	0.04
PCB-1221	*	*	0.10
PCB-1232	*	*	0.10
PCB-1242	*	*	0.05
PCB-1248	*	*	0.08
PCB-1254	*	*	0.08
PCB-1260	*	*	0.15

* Multiple peak response. See Figures 2-10.

** Detection limit is calculated from the minimum detectable GC response being equal to five times the GC background noise, assuming a 10 ml final volume of the 1 liter sample extract, and assuming a GC injection of 5 microliters.

Column 1 conditions: Supelcoport 100/120 mesh coated with 1.5% SP-2250/1.95% SP-2401 packed in a 180 cm long x 4 mm ID glass column with 5% Methane/95% Argon carrier gas at 60 ml/min flow rate. Column temperature is 200°C.

Column 2 conditions: Supelcoport 100/120 mesh coated with 3% OV-1 in a 180 cm long x 4 mm ID glass column with 5% Methane/95% Argon carrier gas at 60 ml/min flow rate. Column temperature is 200°C.

TABLE II

DISTRIBUTION AND RECOVERY OF CHLORINATED PESTICIDES AND PCBs USING FLORISIL COLUMN CHROMATOGRAPHY

Parameter	Recovery (%) by Fraction* 1(6%)	2(15%)	3(50%)
Aldrin	100		
a-BHC	100		
b-BHC	97		
d-BHC	98		
g-BHC	100		
Chlordane	100		
4,4'-DDD	99		
4,4'-DDE	98		
4,4'-DDT	100		
Dieldrin	0	100	
Endosulfan I	37	64	
Endosulfan II	0	7	91
Endosulfan sulfate	0	0	106
Endrin	4	96	
Endrin aldehyde	0	68	26
Heptachlor	100		
Heptachlor epoxide	100		
Toxaphene	96		
PCB-1016	97		
PCB-1221	97		
PCB-1232	95	4	
PCB-1242	97		
PCB-1248	103		
PCB-1254	90		
PCB-1260	95		

*From: "Development and Application of Text Procedures for Specific Organic Toxic Substances in Wastewaters. Category 10-Pesticides and PCB's. Report for EPA Contract 68-03-2606.

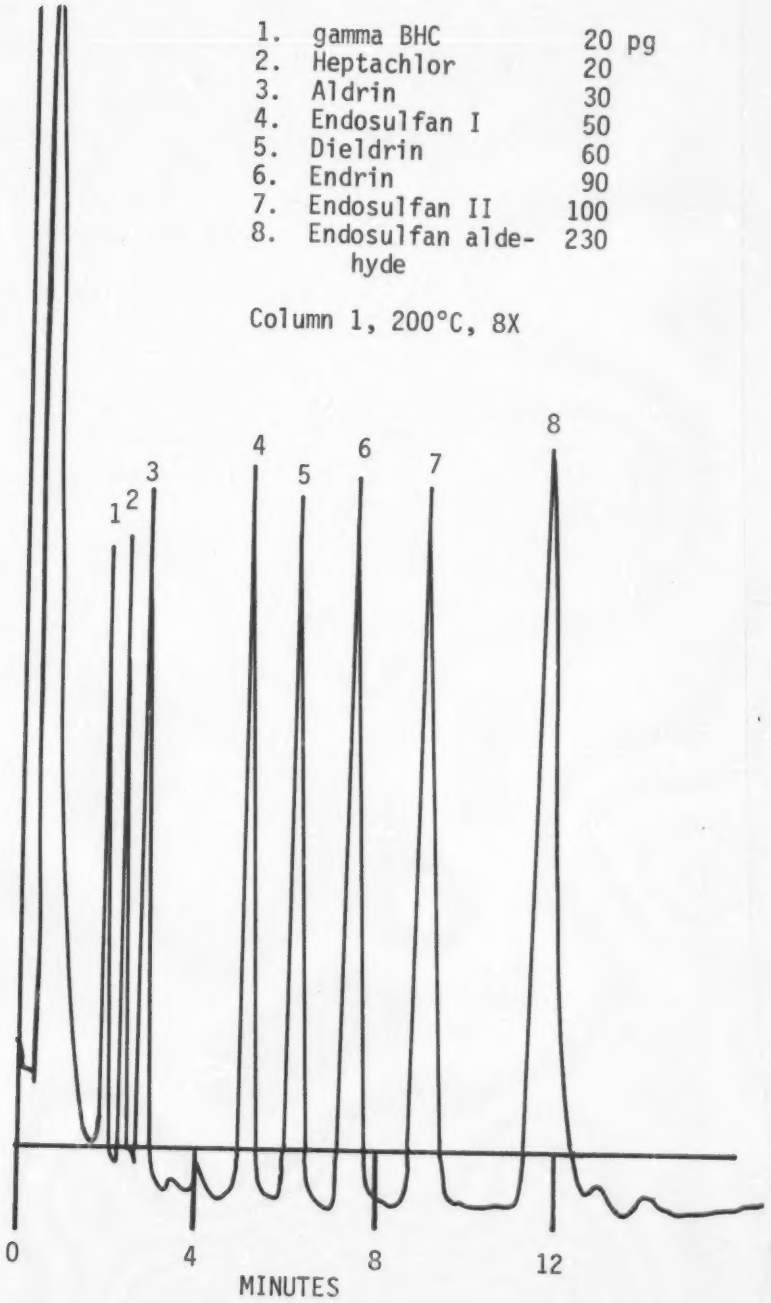

Figure A2. Group II

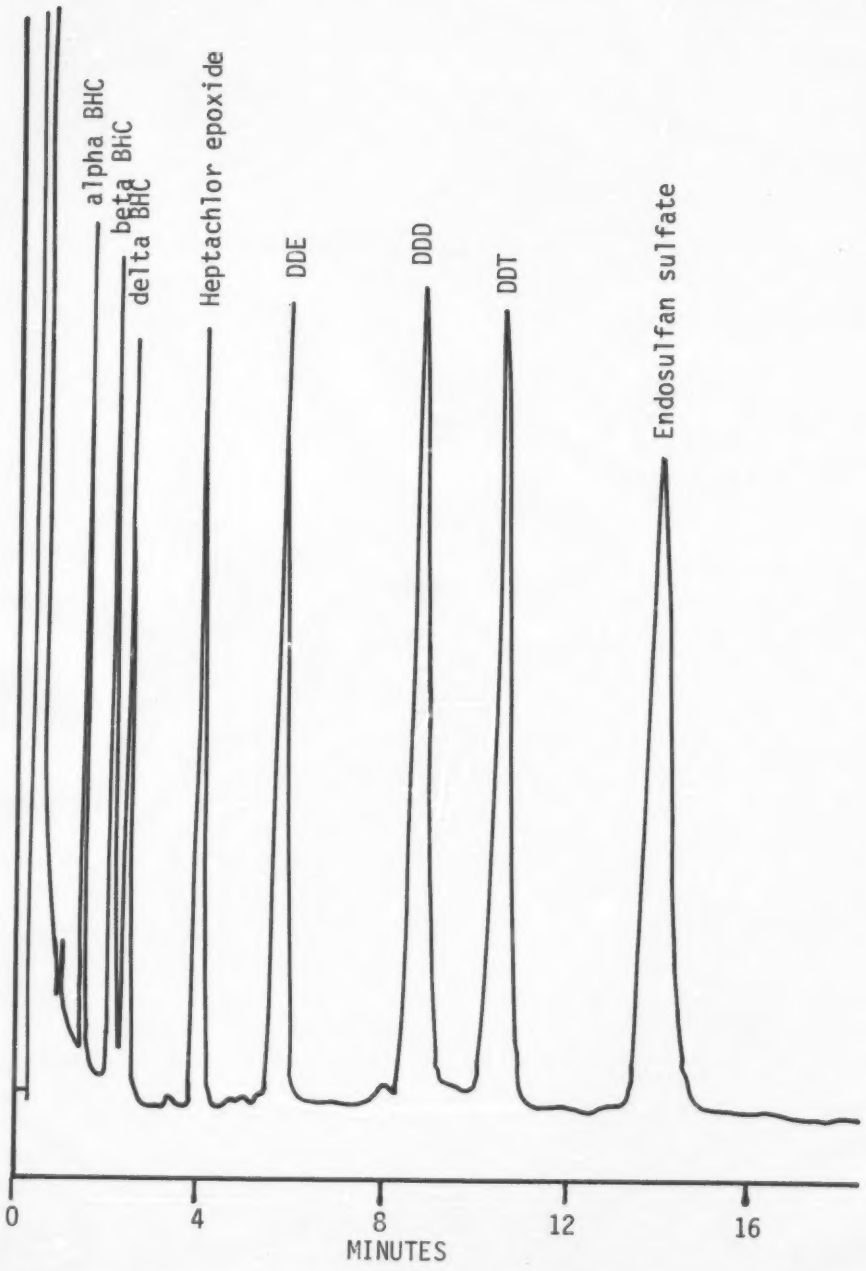

Figure 1. EC Gas Chromatography of Organochlorine Pesticides on Column 1. For conditions, see Table I.

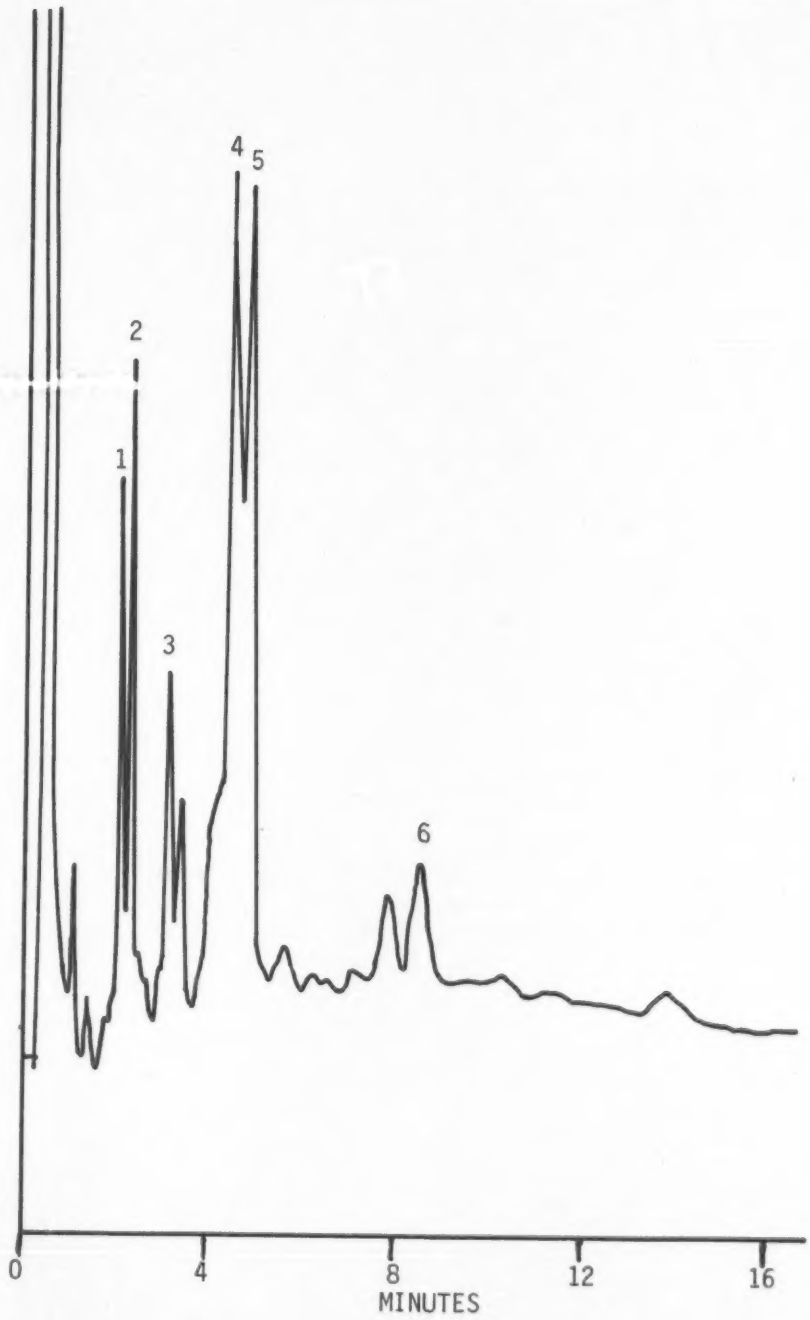

Figure 2. EC Gas Chromatography of Chlordane on Column 1. For conditions, see Table I.

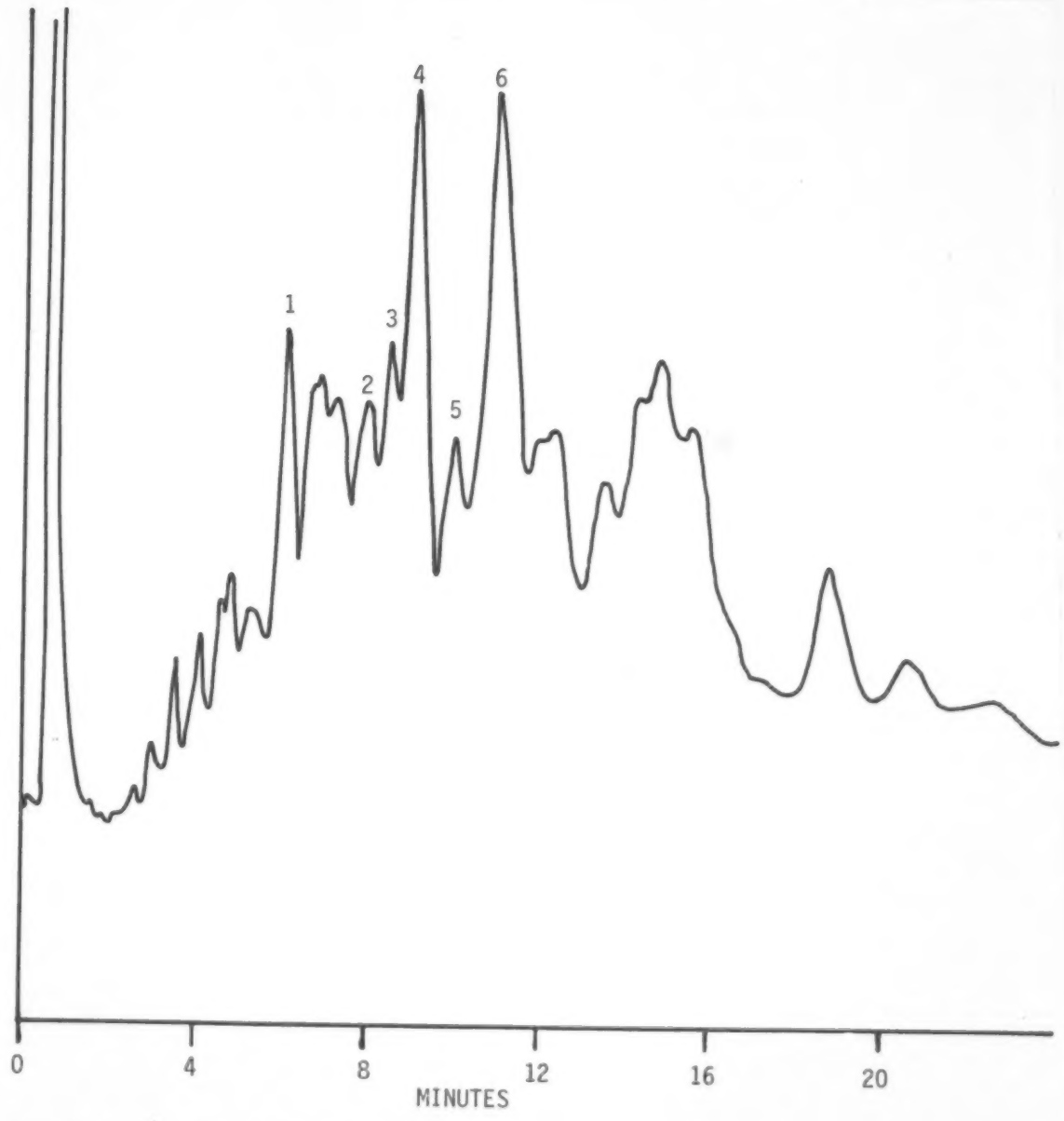

Figure 3. EC Gas Chromatography of Toxaphene on Column 1. For conditions, see Table I.

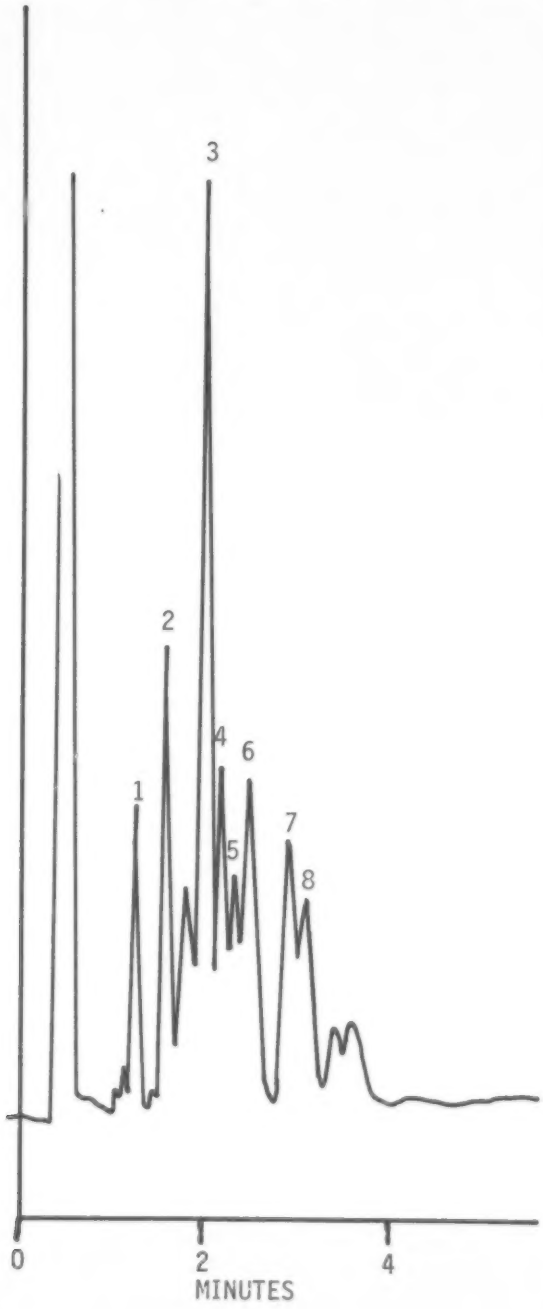

Figure 4. EC Gas Chromatography of PCB-1016 on Column 1. For conditions, see Table I.

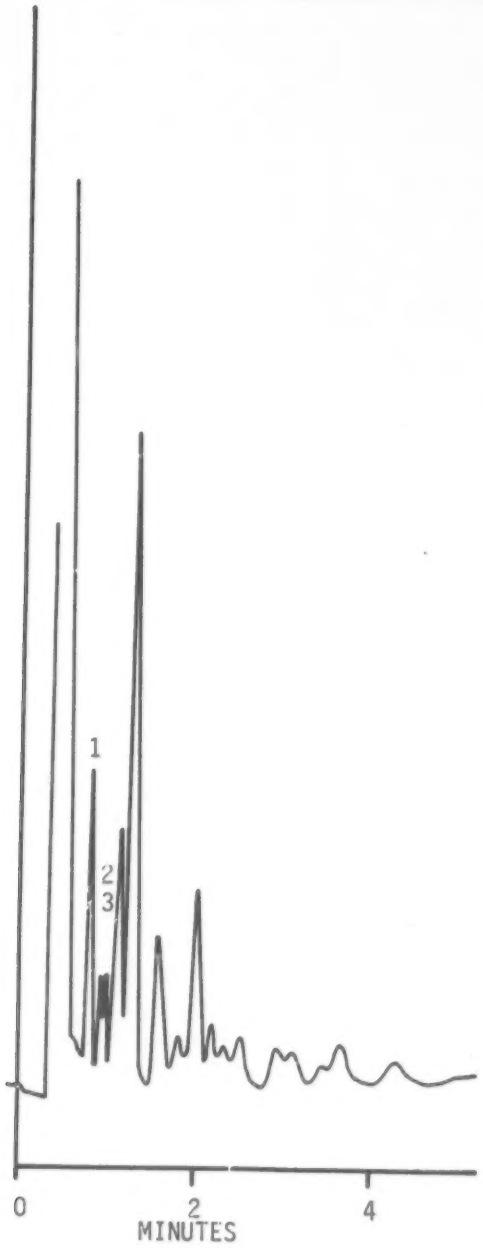

Figure 5. EC Gas Chromatography of PCB-1221 on Column 1. For conditions, see Table I.

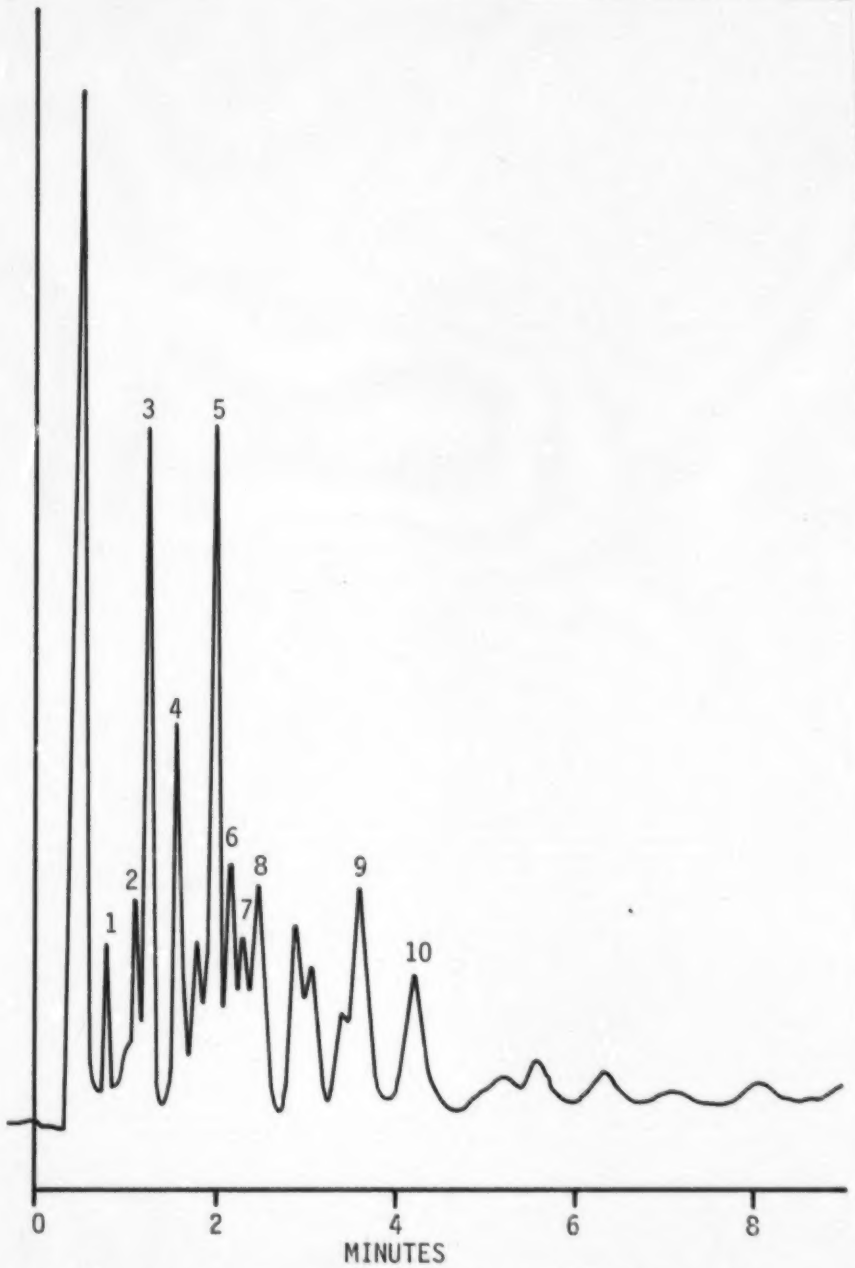

Figure 6. EC Gas Chromatography of PCB-1232 on Column 1. For Conditions, See Table I.

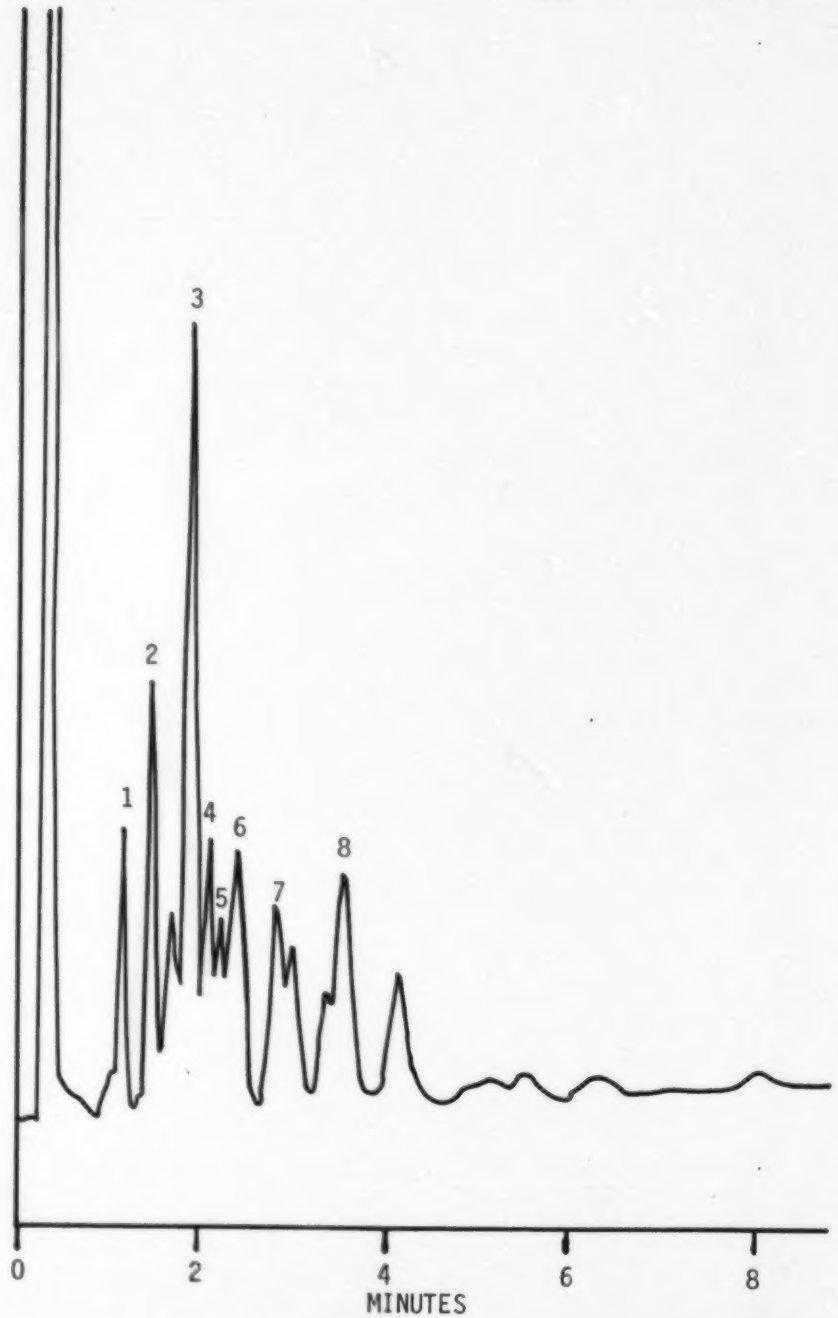

Figure 7. EC Gas Chromatography of PCB-1242 on Column 1. For conditions, see Table I.

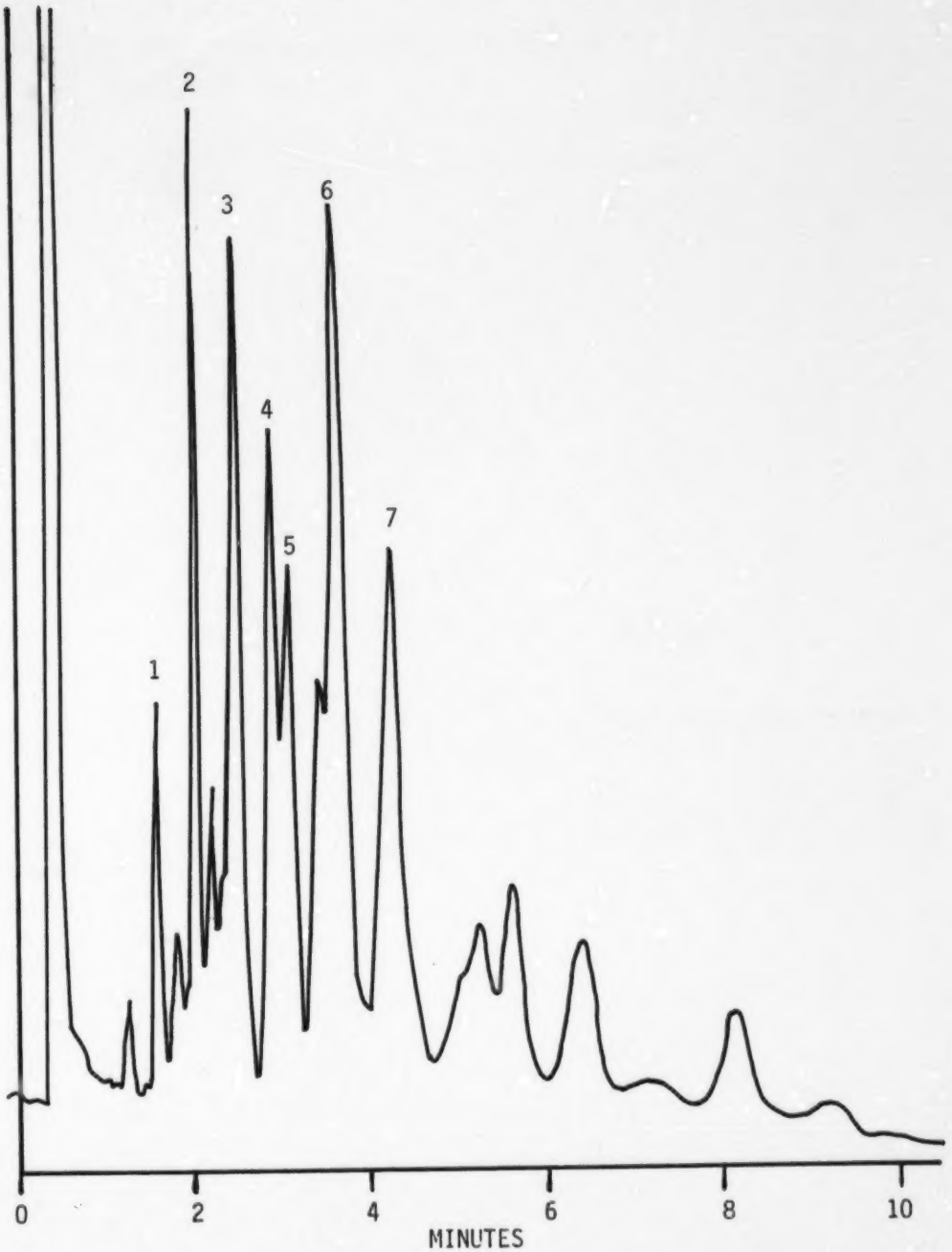

Figure 8. EC Gas Chromatography of PCB-1248 on Column 1. For conditions, see Table I.

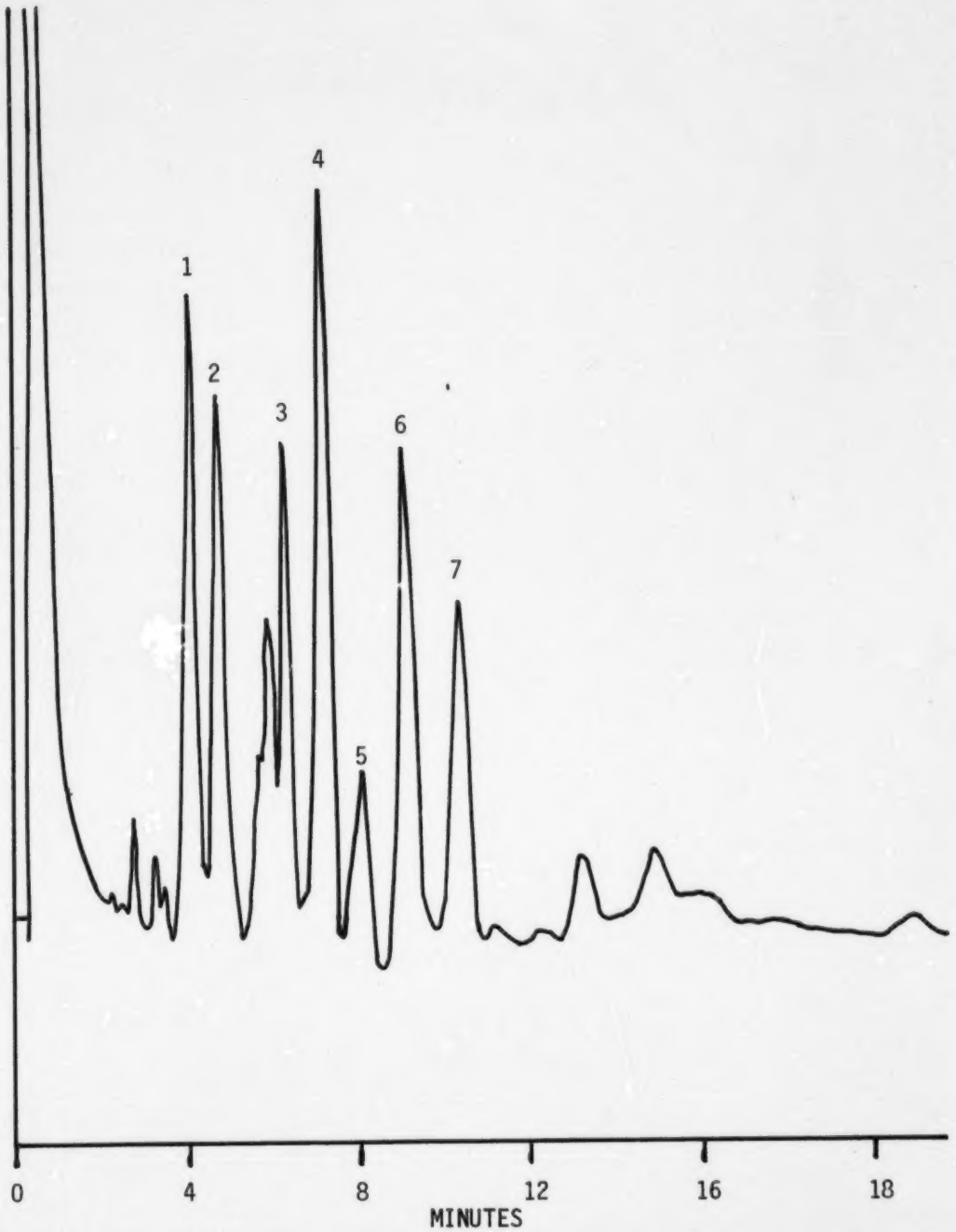

Figure 9. EC Gas Chromatography of PCB-1254 on Column 1. For conditions, see Table I.

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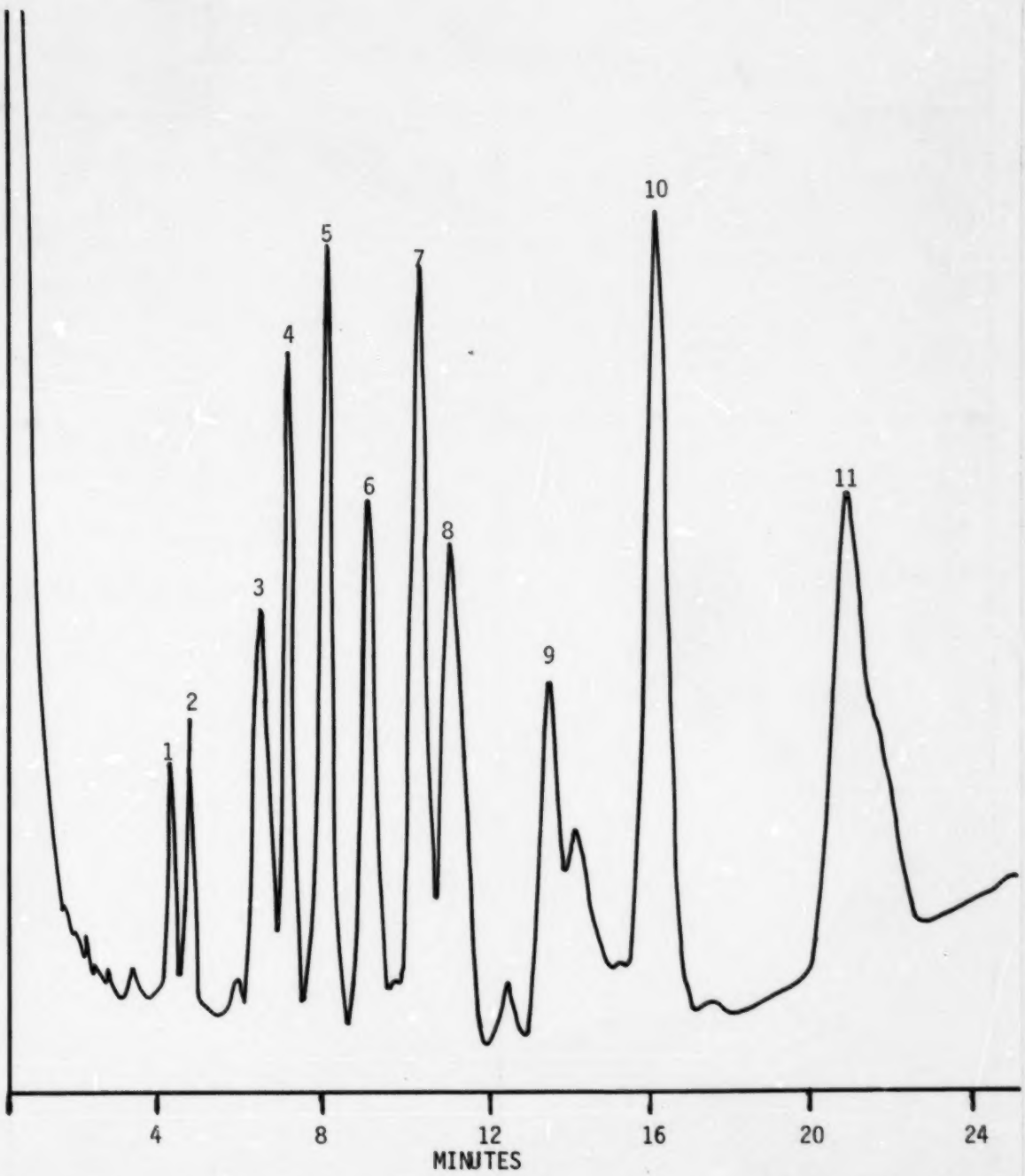

Figure 10. EC Gas Chromatography of PCB-1260 on Column 1. For Conditions, see Table I.

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